

# SERVICE MANUAL

**BE-3D** CHASSIS

MODEL	COMMANDER	DEST.	CHASSIS NO.	MODEL	COMMANDER	DEST.	CHASSIS NO.
<b>KV-28WS2B</b>	RM-862	French	SCC-K01M-A	<b>KV-28WS2K</b>	RM-862	OIRT	SCC-K08V-A
<b>KV-28WS2D</b>	RM-862	AEP	SCC-K07N-A	<b>KV-28WS2R</b>	RM-862	OIRT	SCC-K20A-A
<b>KV-28WS2E</b>	RM-862	Spanish	SCC-K06M-A	<b>KV-28WS2U</b>	RM-862	UK	SCC-K04H-A



MICROFILM

**TRINITRON® COLOR TV**  
**SONY®**

ITEM	MODEL	Television System	Channel Coverage	Colour System
French	B/G/H, D/K, L, I	L SECAM VHF: F2-F10 UHF: F21-F69 TV CABLE TV (1) VHF: B-Q UHF: S21-S44 PAL B/G/H VHF: E2-E12 UHF: E21-E69 CABLE TV (1) : S1-S41 CABLE TV (2) : S01-S05, M1-M10, U1-U10 ITALIA VHF: A-H, H1, H2 PAL I UHF: B21-B69 D/K VHF: R01-R12 UHF: R21-R69 CABLE TV VHF: S1-S41, UHF: S01-S05	PAL, SECAM NTSC3.58/4.43 (video input only)	
AEP	B/G/H, D/K	B/G/H VHF: E2-E12 UHF: S1-S20 CABLE TV (1) : S1-S41 CABLE TV (2) : S01-S05, M1-M10, U1-U10 ITALIA VHF: A-H, H1, H2 D/K VHF: R01-R12 UHF: R21-R69 CABLE TV VHF: S1-S41, UHF: S01-S05	PAL, SECAM NTSC3.58/4.43 (video input only)	
Spanish	B/G/H, D/K	PAL B/G/H VHF: E2-E12 UHF: E21-E69 CABLE TV (1) : S1-S41 CABLE TV (2) : S01-S05, M1-M10, U1-U10 ITALIA VHF: A-H, H1, H2 D/K VHF: R01-R12 UHF: R21-R69 CABLE TV VHF: S1-S41, UHF: S01-S05	PAL, SECAM NTSC3.58/4.43 (video input only)	
OIRT	B/G/H, D/K	B/G/H VHF: E2-E12 UHF: E21-E69 CABLE TV (1) : S1-S41 CABLE TV (2) : S01-S05, M1-M10, U1-U10 ITALIA VHF: A-H, H1, H2 D/K VHF: R01-R12 UHF: R21-R69 CABLE TV VHF: S1-S41, UHF: S01-S05	PAL, SECAM NTSC3.58/4.43 (video input only)	
UK	I	UHF: U21-U69	PAL NTSC3.58/4.43 (video input only)	

MODEL	28WS2B	28WS2D	28WS2E	28WS2K 28WS2R	28WS2U
Power Consumption	112W	112W	112W	112W	185W

## SPECIFICATIONS

Picture Tube	Super Trinitron WIDE Approx. 71 cm (28 inches) (Approx. 66 cm picture measured diagonally) 110° -deflection	[FRONT] → 3 , Video input - phono jack → 3 , Audio inputs - phono jacks → 3 , S video input - 4 pin DIN ○ Stereo minijack - headphone jack
Rear/Front Terminals		
[REAR]		
-	→ 1 21-pin Euro connector (CENELEC standard) - Inputs for audio and video signals - Inputs for RGB - Outputs for TV audio and video signals	Sound output Left/Right 2x10W (RMS) 2x20W (music power) Centre 2x2.5W (RMS) Surround 2x5W (music power) Dimensions 798x497x531 mm approx. Weight Approx. 43.0 kg (with speakers)
-	→ 2/ → 2, 21-pin Euro connector (CENELEC standard) - Inputs for audio and video signals - Inputs for S video - Outputs for TV audio and video signals (selectable)	Supplied accessories RM-862 Remote Commander (1) Batteries R6 (2) Surround Speakers (2) Surround Speakers Leads (2)
-	→ audio outputs - phono jacks Left/Right Speaker Terminals Surround Speaker Terminals	Other features Fastext, Dolby Pro Logic NICAM (KV-28WS2B, 28WS2E, 28WS2K, 28WS2R and 28WSU only)

## [RM-862]

Remote control system	Infrared control
Power requirements	3V dc (2 batteries) R6 (size AA)
Dimensions	Approx. 210x56x24 mm (w/h/d)
Weight	Approx. 110g (Not including battery)

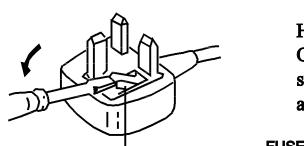
**Design and specifications are subject to change without notice.**

Item \ Model name	KV-28WS2B	KV-28WS2D	KV-28WS2E	KV-28WS2K KV-28WS2R	KV-28WS2U
PIP	OFF	OFF	OFF	OFF	OFF
MPIP	OFF	OFF	OFF	OFF	OFF
Rotation Coil	ON	ON	ON	ON	ON
VM Set	ON	ON	ON	ON	ON
Scart 1	ON	ON	ON	ON	ON
Scart 2	ON	ON	ON	ON	ON
Front in (3)	ON	ON	ON	ON	ON
AKB in 16:9 mode	ON	ON	ON	ON	ON
TXT	ON	ON	ON	ON	ON
FLOF	ON	ON	ON	ON	ON
TOP	ON	ON	ON	ON	ON
Norm B/G/H	ON	ON	ON	ON	OFF
Norm I	ON	OFF	OFF	OFF	ON
Norm D/K	ON	ON	ON	ON	OFF
Norm L	ON	OFF	OFF	OFF	OFF
Language Preset	French	German	Spanish	OIRT	English

### **WARNING ( KV-28WS2U only )**

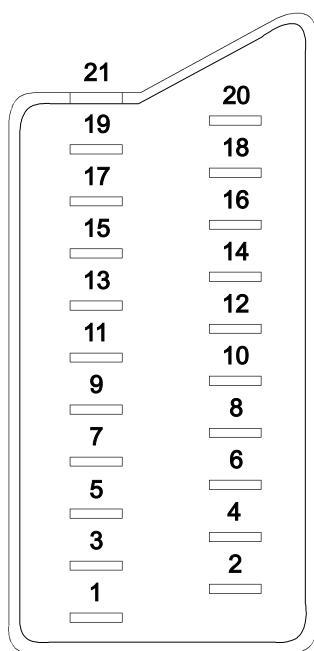
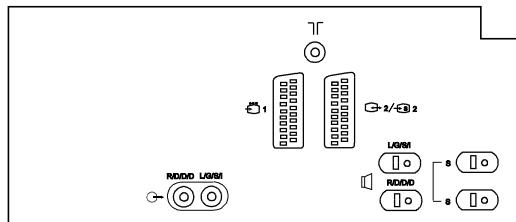
The flexible mains lead is supplied connected to a B.S. 1363 fused plug having a fuse of 5 AMP capacity. Should the fuse need to be replaced, use a 5 AMP FUSE approved by ASTA to BS 1362, ie one that carries the  mark.

IF THE PLUG SUPPLIED WITH THIS APPLIANCE IS NOT SUITABLE FOR YOUR SOCKET OUTLETS IN YOUR HOME. IT SHOULD BE CUT OFF AND AN APPROPRIATE PLUG FITTED. THE PLUG SEVERED FROM THE MAINS LEAD MUST BE DESTROYED AS A PLUG WITH BARED WIRES IS DANGEROUS IF ENGAGED IN A LIVE SOCKET OUTLET. When an alternative type of plug is used it should be fitted with a 5 AMP FUSE, otherwise the circuit should be protected by a 5 AMP FUSE at the distribution board.



How to replace the fuse.  
Open the fuse compartment with the screwdriver blade and replace the fuse.

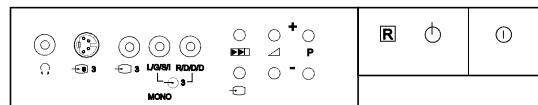
## 21 pin connector ( 1, 2 / 2 )



Pin No.	1	2	4	Signal	Signal Level
1	○	○	○	Audio output B (Right)	Standard level : 0.5V rms Output impedance : Less than 1k ohms*
2	○	○	○	Audio input B (Right)	Standard level : 0.5V rms Output impedance : More than 10k ohms*
3	○	○	○	Audio output A (Left)	Standard level : 0.5V rms Output impedance : Less than 1k ohm*
4	○	○	○	Ground (Audio)	
5	○	○	○	Ground (Blue)	
6	○	○	○	Audio input A (Left)	Standard level : 0.5V rms Output impedance : Less than 10k ohm*
7	○	●	●	Blue input	0.7 ± 3dB, 75 ohms, positive
8	○	○	○	Function select (AV control)	High state (9.5 - 12V) : Part mode Low state (0 - 2V) : TV mode Input impedance : More than 10k ohms Input capacitance : Less than 2nF
9	○	○	○	Ground (Green)	
10	○	○	○	Open	
11	○	●	●	Green	
12	○	○	○	Open	
13	○	○	○	Ground (Red)	
14	○	○	○	Ground (Blanking)	
15	○	—	—	Red input	0.7 ± 3dB, 75 ohms, positive
	—	○	○	(S signal) chroma input	0.7 ± 3dB, 75 ohms, positive
16	○	●	●	Blanking input (Ys signal)	High state (1 - 3V) Low state (0 - 0.4V) Input impedance : 75 ohms
17	○	○	○	Ground (Video output)	
18	○	○	○	Ground (Video input)	
19	○	○	○	Video output	1V ± 3dB, 75ohms, positive sync : 0.3V (-3 + 10dB)
20	○	—	—	Video input	1V ± 3dB, 75ohms, positive sync : 0.3V (-3 + 10dB)
	—	○	○	Video input Y (S signal)	1V ± 3dB, 75ohms, positive sync : 0.3V (-3 + 10dB)
21	○	○	○	Common ground (plug, shield)	

○ Connected    ● Not Connected (Open)    \* at 20Hz - 20kHz

Pin No.	Signal	Signal Level
1	Ground	
2	Ground	
3	Y (S signal) input	1V ± 3dB 75 ohm, positive Sync. 0.3V -3 + 10dB
4	C (S signal) input	0.3V ± 3dB 75ohm, positive Sync.



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**CAUTION**

**CAUTION**  
**SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE  
ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON  
PAINTED ON THE CRT. AFTER REMOVING THE ANODE**

## WARNING !!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.

THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

#### SAFETY-RELATED COMPONENT WARNING!!

SAFETY-RELATED COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND, IN THE PARTS LIST ARE CRITICAL FOR SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

## ATTENTION

**ATTENTION**

**APRES AVOIR DECONNECTE LE CAP DE L'ANODE, COURT-CIRCUITER L'ANODE DU TUBE CATHODIQUE ET CELUI DE L'ANODE DU CAP AU CHASSIS METALLIQUE DE L'APPAREIL, OU AU COUCHE DE CARBONE PEINT SUR LE TUBE CATHODIQUE OU AU BUNDAGE DU TUBE CATHODIQUE.**

## ATTENTION !!

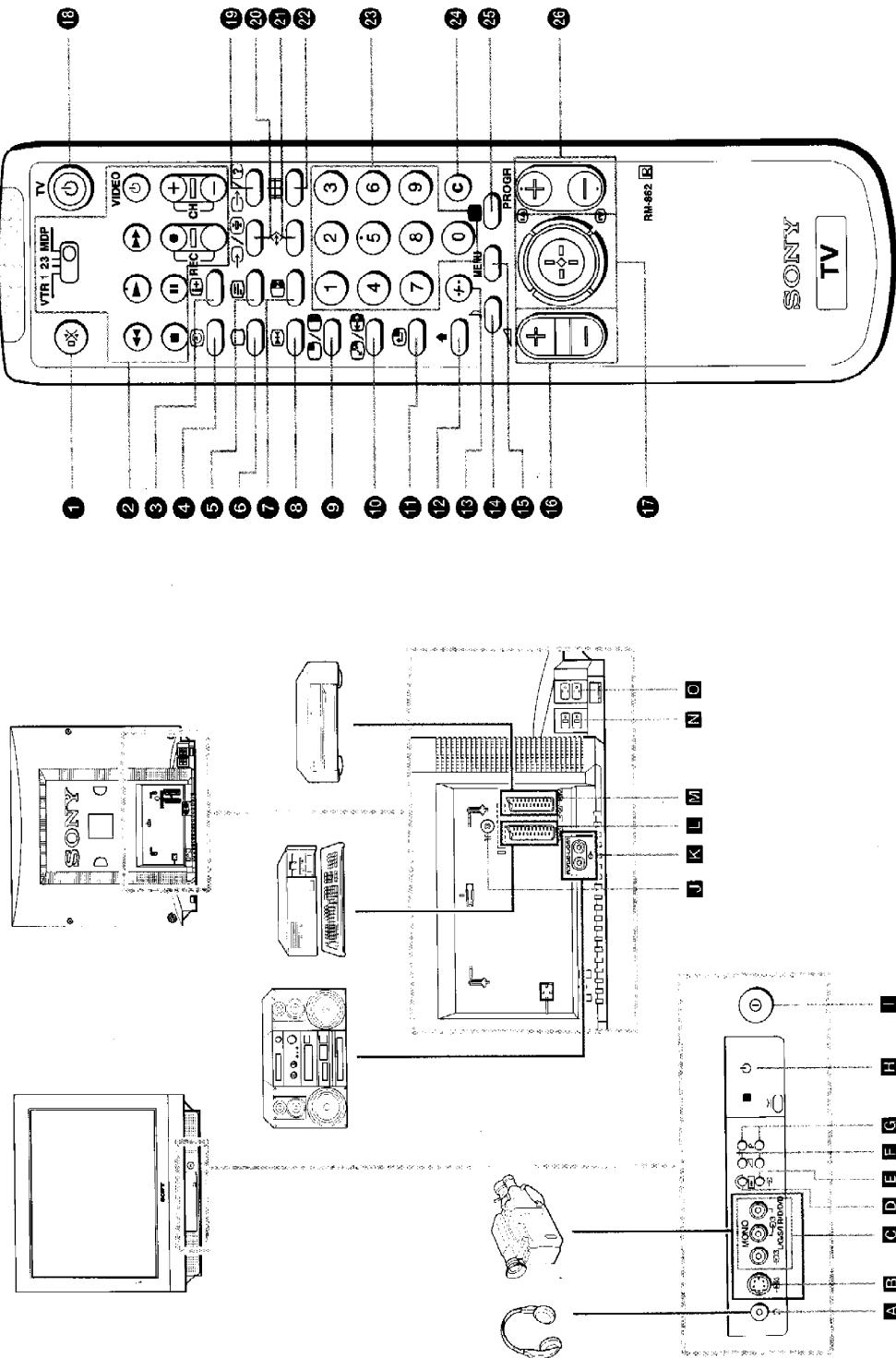
**AFIN D'EVITER TOUT RISQUE D'ELECTROCUTION PROVENANT D'UN CHÂSSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ÊTRE UTILISÉ LORS DE TOUT DÉPANNAGE. LE CHÂSSIS DE CE RÉCEPTEUR EST DIRECTEMENT RACCORDE À L'ALIMENTATION SECTEUR.**

## ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET PAR UNE MARQUE  SUR LES VUES EXPLOSÉES ET LES LISTES DE PIÈCES SONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÈCE EST INDICUIT DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY.

## SECTION 1 GENERAL

The operating instructions mentioned here are partial abstracts from the Operating Instructions Manual. The page numbers of the Operating Instruction Manual remain as in the manual.



## Overview

This section briefly describes the controls and the buttons on the TV set and on the Remote Commander. Please open the flap at the front of the Instruction manual for illustrations of the TV set and the Remote Commander. Letters in boxes refer to the buttons on the TV set, numbers in circles to the buttons on the Remote Commander. For more information, refer to the page numbers given next to each description.

TV-Buttons and Terminals		Reference and Symbol	Name	Refer to Page
<b>Front of the set</b>				
A	Ⓐ		Headphones jack	33
B	Ⓑ	– $\boxtimes$ 3	S video input jack	33
C	Ⓒ	– $\odot$ 3, – $\odot$ 3	Audio / video input jacks	33
D	Ⓓ	►	Automatic Preset button	12
E	Ⓔ	–	Input mode button	14
F	Ⓕ	∠+/-	Volume control	13
G	Ⓖ	P+/-	Programme button	13
H	Ⓗ	∅	Standby mode indicator	13
I	Ⓘ	①	Main power switch	13
<b>Rear of the set</b>				
J	Ⓛ		Aerial socket	11
K	Ⓜ	Ⓐ	Audio phono jacks	33
L	Ⓛ	– $\boxtimes$ 1	21 pin Euro connector	33
M	Ⓜ	– $\odot$ 2, – $\odot$ 2	21 pin Euro connector	33
N	Ⓝ	L/G/S/L,R/D/D/D	Left/Right speaker terminals	10
O	Ⓞ	S	Surround speaker terminals	10

## Remote Commander Operation

Remote Commander Operation			
Reference and Symbol	Name		Refer to Page
①	Muting on/off button	13	
②	<b>VCR operation</b>	36	
③	Video equipment selector	36	
④	Video equipment operation buttons	36	
⑤	VIDEO CH +/-		
⑥	On-screen display button	13	
⑦	Time display button	13	
⑧	Teletext button	14	
⑨	TV power on/TV mode button	13, 14	
⑩	No function on this set	-	
⑪	Double digit entering button	13	
⑫	Sound mode button	20	
⑬	Menu on/off button	15	
⑭	Volume control button	13	
⑮	Joystick for menu selection.	15	
⑯	Press to confirm selection (OK function)		
⑰	TV standby button	13	
⑱	No function on this set	-	
⑲	Teletext: reveal button	31	
⑳	<b>Input mode button</b>	14	
㉑	Teletext: Freezing the subpage	31	
㉒	Button to change screen format	14	
㉓	Number buttons	13	
㉔	Direct channel button	14	
㉕	Picture mode button	20	
㉖	Programme buttons	13	
㉗	Teletext: Page up/page down buttons	14	

**Step 1****Connecting the Speakers**

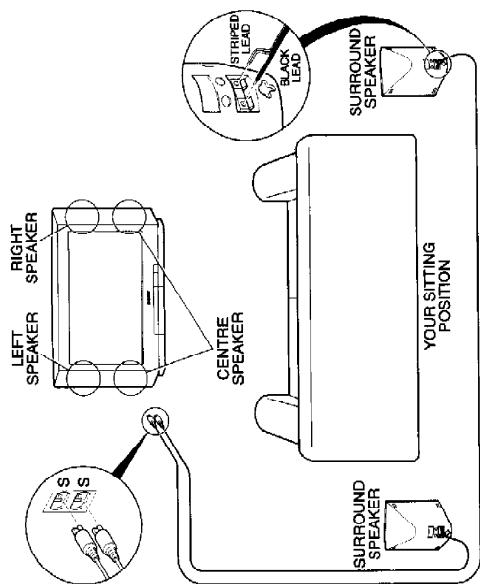
Do not switch on the TV before you connect the speakers.

Dolby (\*) Pro Logic Surround normally requires 5 speakers:

- Centre speaker (incorporated in the TV set)
- for anchoring the stable sound image, like dialogue, to the TV screen
- Left and Right front speakers (incorporated in the TV set)
- for the normal two channel stereo or bilingual broadcasts

**Surround speakers**

- for the special effects created by the surround channel

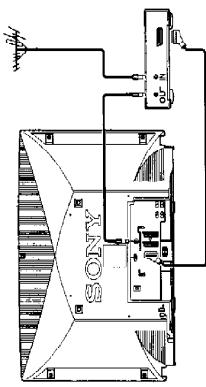
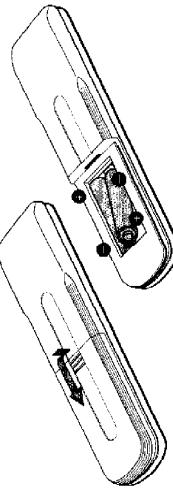
**Step 2****Connecting the Aerial  
(If you connect a VCR, skip to step 3)**

Insert the aerial plug tightly into the aerial socket . Use a good-quality aerial cable (not supplied), corresponding to the relevant regulations.

**Step 3****Connecting a VCR**

We recommend that you tune in the VCR signal to programme number "0". For details, see "Presetting Channels Manually" on page 17.

See "Connecting Optional Equipment" on page 33 for more information.

**Step 4****Inserting the Batteries Into the  
Remote Commander**

**Notes:**

- Connect the speakers using the leads provided. The striped lead (+) is for the red terminal of the speaker and the black lead (-) is for the black terminal.
- If you use your own speakers, make sure they are at least 8Ω impedance and are magnetically shielded. Otherwise picture distortion may occur.
- (\*) Manufactured under license from Dolby Laboratories Licensing Corporation. DOLBY, the double-D symbol  and "PRO LOGIC" are trademarks of Dolby Laboratories Licensing Corporation.

Respect your environment! Dispose of used batteries in an environmentally friendly way.

## Step 5

### Presetting Channels Automatically

With this function, the TV can automatically search and store up to 100 different channel numbers.  
If you prefer manual presetting, refer to "Presetting Channels Manually" on page 17.

- 1 Plug into mains.  
Press the power switch ① **I** on the TV set.
- 2 Press and hold the button **F** ② **E** on the TV set until the automatic menu is displayed and the search starts.

After all available channels are stored, the normal TV picture is shown.

**Note:** Channels are automatically stored as follows:

Programme 1	BBC1
Programme 2	BBC2
Programme 3	ITV
Programme 4	CH4 or S4C

### TV Operation

This section explains functions used whilst watching TV. Most operations are carried out using the remote commander (numbers in circles). All basic functions are also available on the TV set (letters in boxes). Open the flap at the front of the Instruction Manual to see the illustrations of the Remote Commander and the TV set.

To	Press
Switch on	① <b>I</b> on TV
Switch off temporarily	② <b>H</b> TV is now in standby mode and ② <b>H</b> indicator on TV lights up.
Switch on from standby mode	② <b>G</b> or any number button ③ <b>G</b>
Switch off completely	① <b>I</b> on TV To save energy, switch off your TV completely when TV is not in use.
Select programmes	PROG R + / - ② <b>G</b> or number buttons ③ <b>G</b> For double digit number, press - / - ③ <b>G</b> then the number e.g. For 23, press - / - ③ <b>G</b> then 2 and 3.
Display on screen indications	② <b>G</b> ③ <b>G</b> . Press again to make the indications disappear.
Adjust the volume	② <b>F</b>
Mute the sound	② <b>E</b>
Display the time (only available when teletext is broadcast)	② <b>D</b> Press again to restore the sound. ② <b>D</b> Press again to make the display disappear.

## Adjusting and Setting the TV Using the Menu

You can adjust and set various functions on the TV using the following remote commander buttons:

1 Press MENU  to switch menu on/off.

2 Use the joystick  as follows.



GREEN : scroll up

RED : decrease/backward

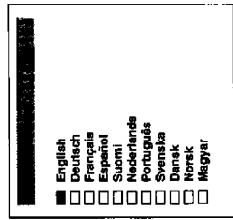
BLUE : scroll down

Pressing the joystick at its neutral position : confirm

## Choosing the Menu Language

This function enables you to change the language of the menu screens.

1 Press power switch  on the TV. If the standby indicator  on the TV is lit, press  or a number button  on the Remote Commander.



2 Press the MENU button  on the remote commander.

3 Push to blue or green to select the language you want then push to yellow.

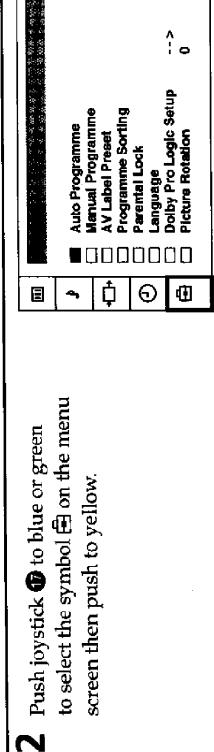
4 Press the MENU button  to restore the normal TV picture.

TV Operation (continued)	To	Press
Tune in a channel temporarily		C  . The indication "C" appears. Enter the double digit number. e.g. For 4, press 0 then 4.
View video input picture (see page 34 for detailed information)		→  repeatedly until the desired video input appears. Press  to restore the TV picture.
Operate Screen Mode (see Page 19 for detailed information)		田  4:3 → Smart → Zoom → Wide When using zoom mode, select 'scroll' to see the cut-off part of the screen.
View teletext (see page 31 for detailed information)		
Switch on		田 
Select a page		three number buttons  or  (for next page) or  (for previous page),
Use fastext		Push joystick  to select a colour.
Switch off		田 

## Presetting Channels Automatically

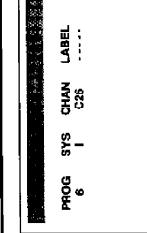
You may have already preset the channels automatically by using the method shown on page 12. You can also preset channels automatically by using the remote commander as follows:

**1** Press the MENU button ⑤.



**2** Push joystick ⑪ to blue or green to select the symbol ⑩ on the menu screen then push to yellow.

**3** Push to blue or green to select 'Auto Programme'.



**4** Push to yellow and hold until the automatic menu is displayed and the search starts.  
After all available channels have been preset, the normal TV picture is shown.

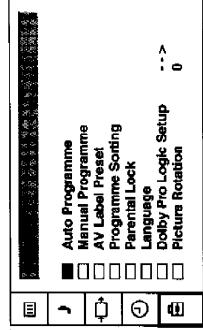
**Note:** Channels are automatically stored as follows:

- Programme 1 BBC1
- Programme 2 BBC2
- Programme 3 ITV
- Programme 4 CH4 or S4C

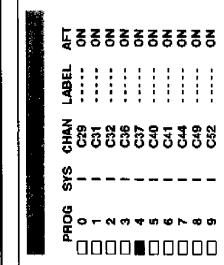
## Presetting Channels Manually

This function enables you to preset channels one by one to different programme numbers. This is also convenient for allocating programme numbers to various video input sources.

**1** Press the MENU button ⑤.



**2** Push joystick ⑪ to blue or green to select the symbol ⑩ on the menu screen then push to yellow.



**3** Push to blue or green to select 'Manual Programme' then push to yellow.

**4** Push to blue or green to select on which programme number you want to preset a channel then push to yellow.

**5** Push to blue or green to select the TV broadcast system '1' or a video input source (AV1, AV2,...) then push to yellow twice.

**6** Select the first number digit of 'CHAN' (channel) then the second number digit of 'CHAN' with the number buttons ⑩ on the remote commander  
or  
Push joystick ⑪ to blue or green to search for the next available channel.

**7** If you want to store the channel, go to step 8. If not, select a new channel using the number buttons ⑩ on the remote commander or push to blue or green to resume the search.

**8** Press the joystick **⑩**.

**9** Repeat steps 4 to 8 to preset other channels.

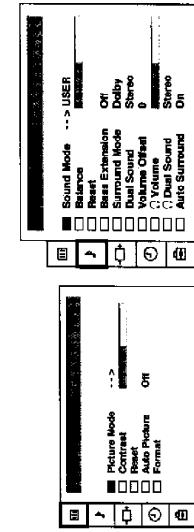
**10** Press the MENU button **⑩** to restore the normal TV picture.

## Adjusting the Picture and Sound

Although the picture and sound are adjusted at the factory, you can adjust them to suit your own taste.

**1** Press the MENU button **⑩**.

**2** Push joystick **⑩** to blue or green to select **⑩** for picture control or **⑨** for sound control then push to yellow.



**3** Push to blue or green to select the desired item then push to yellow.

**4** Push to red or yellow to alter the item then press the joystick **⑩**.  
For the effect of each control, see the following tables.

**5** Repeat steps 3 and 4 to adjust the other items.

**6** Press the MENU button **⑩** to restore the normal TV picture.

## Adjusting the Picture and Sound (continued)

PICTURE CONTROL	Effect
Picture Mode	<ul style="list-style-type: none"> <li>User → Game → Movie → Sports → Live</li> <li>In 'User' mode, you can preset Brightness, Colour, Sharpness and Hue (NTSC signals only) as follows:</li> </ul> <p>1 Push joystick <b>⑩</b> to blue or green to select the desired item then push to yellow.</p> <p>2 Push to red or yellow to adjust then press the joystick <b>⑩</b>.</p> <p>3 Push to red to return to the PICTURE CONTROL menu.</p> <ul style="list-style-type: none"> <li>Darker → Brighter</li> <li>Resets picture to the factory preset levels.</li> <li>All the picture levels automatically change according to the surrounding lighting level. (Auto Picture Control)</li> <li>There are three options.</li> </ul> <p>Format (4:3 → Smart → Zoom → Wide) Scroll or Auto 16:9.</p>
Contrast Reset Auto Picture	<ul style="list-style-type: none"> <li>To preset these, follow the procedure below.</li> </ul> <p>1 Push joystick <b>⑩</b> to blue or green to select the desired item then push to yellow.</p> <p>2 Push to red or yellow to change the setting then press the joystick <b>⑩</b>.</p> <p>3 Push to red to return to the PICTURE CONTROL menu.</p> <p><b>Format/Scroll</b></p> <p>Once 'Zoom' has been selected in 'Format' mode, you can then choose the 'Scroll' function to scroll the screen upwards or downwards to see the cut-off part (e.g. subtitles)</p> <p>or</p> <p>after selecting 'Zoom' and returning to the normal picture, push joystick <b>⑩</b> to blue or green to scroll then press joystick <b>⑩</b>.</p> <p><b>Auto 16:9</b></p> <p>Automatically selects 16:9 picture mode when receiving a 16:9 broadcast (set to 'Off' if signal reception is weak).</p>

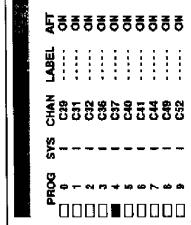
## Adjusting the Picture and Sound (continued)

SOUND CONTROL	Effect
Sound Mode	• User → Rock → Jazz → Pop In 'User' mode, you can preset Treble and Bass as follows. 1 Push joystick <b>①</b> to blue or green to select the item then push to yellow. 2 Push to red or yellow to adjust then press the joystick <b>①</b> . 3 Push to red to return to the 'SOUND CONTROL' menu. • Left →   → Right • Resets sound to the factory preset levels. • Boosts bass by a fixed amount. • Choice among special sound effects. Pro Logic → Pseudo Stereo → Spatial → Club → Theatre → Hall → Church → Stadium → Off • A: Left channel → B: Right channel → stereo → mono • Presets the volume level for individual programmes. -12 → 0 → +12 • Adjusts the headphone volume. • Selects the headphone channels. A: Left channel → B: Right channel → stereo → mono • Automatically selects Pro Logic Surround sound when transmitted. (set to 'Off' if signal is weak).
Balance Reset Bass Extension Surround Mode	
Dual Sound	
Volume Offset	
Volume Dual Sound	
Auto Surround	

— 13 —

## Manual Fine-Tuning

Normally, the automatic fine-tuning (AFT) function is operating. If the picture is distorted however, you can manually fine-tune the TV to obtain a better picture reception.

- 1** Press the MENU button **⑩**.
- 2** Push joystick **①** to blue or green to select the symbol  on the menu screen then push to yellow.
- 3** Push to blue or green to select 'Manual Programme' then push to yellow.  


PROG	SYS	CHAN	LABEL	AFT
0	—	C19	—	Off
1	—	C31	—	—
2	—	C32	—	—
3	—	C38	—	—
4	■	C37	—	—
5	—	C40	—	—
6	—	C35	—	—
7	—	C44	—	—
8	—	C39	—	—
9	—	C32	—	—
- 4** Push to blue or green to select the programme number which corresponds to the channel you want to manually fine-tune.
- 5** Push to yellow repeatedly until the AFT position changes colour.
- 6** Push to blue or green to fine tune the channel frequency (-15 to +15).
- 7** Press the joystick **①**.
- 8** Repeat steps 4 to 7 to fine-tune other channels.
- 9** Press the MENU button **⑩** to restore the normal TV picture.

## Changing Modes Quickly

You can quickly change the Surround Mode or the Picture Mode without entering the 'SOUND CONTROL' or the 'PICTURE CONTROL' menu.

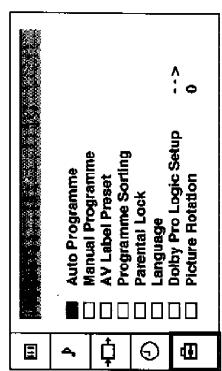
- 1** Press **■ ② ③** for the picture or **↓ ① ②** for the sound.
- 2** Push joystick **①** to blue or green to select the desired mode.
- 3** Press **■ ② ③** or **↓ ① ②** again to restore the normal TV screen.

## Sorting Programme Positions

This function enables you to exchange the programme positions.

**1** Press the MENU button ⑯.

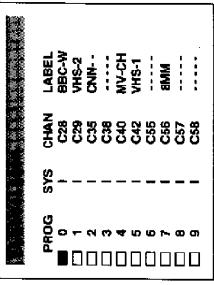
**2** Push joystick ⑩ to blue or green to select the symbol ④ on the menu screen then push to yellow.



**3** Push to blue or green to select 'Programme Sorting' then push to yellow.

PROG	SYS	CHAN	LABEL
■ 0	1	C28	BBC-W
□ 1	2	C29	VHS-2
□ 2	3	C38	CNN--
□ 3	4	C40	MY-CH
□ 4	5	C42	VHS-1
□ 5	6	C56	---
□ 6	7	C56	6MM
□ 7	8	C57	---
□ 8	9	C58	---

**4** Push to blue or green to select the channel you want to exchange then push to yellow.



**4** Push to blue or green to select the channel you want to block then push to yellow.

A symbol appears before the programme number to indicate that this channel is now blocked.

**5** Push to blue or green to select the programme position of the channel you want exchanged then push to yellow.

**6** Repeat steps 4 to 5 if you wish to exchange other programme positions.

**7** Press the MENU button ⑯ to restore the normal TV picture.

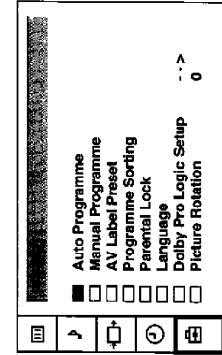
**Note:** To unblock, push to yellow after selecting the channel to unblock in the 'Parental Lock' menu.

## Using Parental Lock

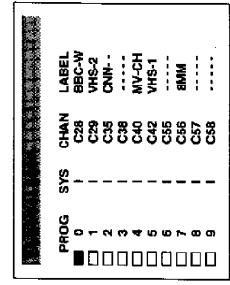
This function enables you to prevent undesirable broadcasts from appearing on the screen. We suggest you use this function to prevent children from watching programmes which you consider unsuitable.

**1** Press the MENU button ⑯.

**2** Push joystick ⑩ to blue or green to select the symbol ④ on the menu screen then push to yellow.



**3** Push to blue or green to select 'Parental Lock' then push to yellow.



**4** Push to blue or green to select the channel you want to block then push to yellow.

A symbol appears before the programme number to indicate that this channel is now blocked.

**5** Repeat step 4 if you wish to block other channels.

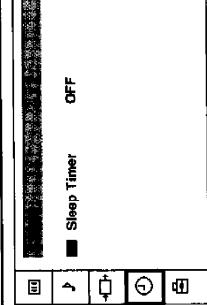
**6** Press the MENU button ⑯ to restore the normal TV picture.

## Using the Sleep Timer

This function enables you to select a time period after which the TV automatically switches into standby mode.

1 Press the MENU button ⑯.

2 Push joystick ⑦ to blue or green to select the symbol ⑩ on the menu screen then push to yellow.



3 Push to yellow.

4 Push to red or yellow to set time delay and press the joystick ⑦.

OFF 0:30 1:00 1:30 ..... 3:30 4:00

One minute before the TV switches into standby mode, a message is displayed on the screen.

5 Press the MENU button ⑯ to restore the normal TV picture.

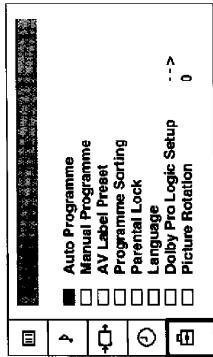
## Adjusting the Picture Rotation

**(KV-28WS2U only)**

If, due to the earth magnetism, the picture slants, you can use the function 'Picture Rotation' to readjust the picture.

1 Press the MENU button ⑯.

2 Push joystick ⑦ to blue or green to select the symbol ⑩ on the menu screen then push to yellow.



3 Push to blue or green to select 'Picture Rotation' then push to yellow.

4 Push to red or yellow to adjust the picture rotation then press the joystick ⑦. The adjusting range is -5 to +5.

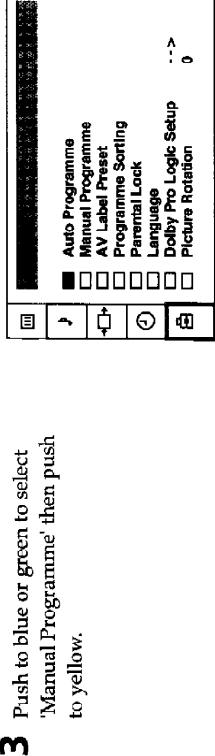
5 Press the MENU button ⑯ to restore the normal TV picture.

## Skiping Programme Positions

This function enables you to skip unused programme positions when selecting them with the PROGR+/- buttons. However, you can still watch the channel of the skipped programme position by using the number buttons.

**1** Press the MENU button ⑯.

**2** Push joystick ⑯ to blue or green to select the symbol ⑩ on the menu screen then push to yellow.



**4** Push to blue or green to select the programme position you want to skip then push to yellow.

**5** Push to blue or green until '---' appears in the 'SYS' position.

PROG	SYS	CHAN	LABEL	AFT
0		C29	---	ON
1		C31	---	ON
2		C32	---	ON
3		C35	---	ON
4		C37	---	ON
5		C40	---	ON
6		C41	---	ON
7		C44	---	ON
8		C49	---	ON
9		C52	---	ON

**6** Press the joystick ⑯.

**7** Repeat steps 4 to 6 to skip other programme positions.

**8** Press the MENU button ⑯ to restore the normal TV picture.

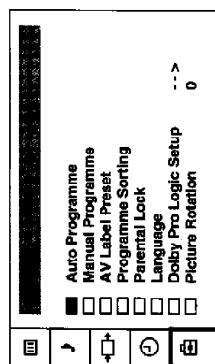
## Captioning a Station Name

Names for channels are usually automatically taken from teletext if available. You can however name a channel on an input video source using up to five characters (letters or numbers).

**1** Press the MENU button ⑯.

**2** Push joystick ⑯ to blue or green to select the symbol ⑩ on the menu screen then push to yellow.

**3** Push to blue or green to select 'Manual Programme' then push to yellow.



**4** Push to blue or green to select the channel you wish to caption then push to yellow repeatedly until the first element of the 'LABEL' position is highlighted.



**6** After selecting all the characters, press the joystick ⑯.

**7** Repeat steps 4 to 6 to caption names for other channels.

**8** Press the MENU button ⑯ to restore the normal TV screen.

## Setting Up Dolby Pro Logic

Before viewing Dolby Pro Logic encoded programmes, you have to set up the levels or modes of the speakers.

Normally this is required only when you install the TV and the speakers or change their positions.

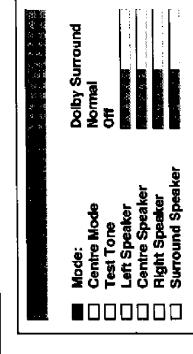
**1** Press the MENU button ⑯.

**2** Push joystick ⑯ to blue or green to select the symbol  on the menu screen then push to yellow.

**3** Push to blue or green to select 'Dolby Pro Logic Setup' then push to yellow.



**4** Push to blue or green to select 'Mode' then push to yellow.



**5** Push to red or yellow to select the desired mode then press the joystick ⑯.

Dolby Pro Logic:  
Dolby 3 Stereo:

if you want to use all the five speakers

if you do not want to use the surround speakers

**6** Push to blue or green to select 'Centre Mode' then push to yellow.

**7** Push to red or yellow to select the desired mode then press the joystick ⑯.

Normal:

if you want to activate all the speakers

Wide:

if you want a wider bandwidth sound effect

Phantom:

if you do not want to use the centre speaker

**8** Push to blue or green to select 'Test Tone' then push to yellow.

**9** Push to red or yellow to select 'On' then press the joystick ⑯.

The test tone cycles through all the speakers.

**10** Push to blue to select 'Left Speaker' then push to yellow.  
The test tone stays at the selected speaker only.

**11** Push to red or yellow to adjust the sound level then press the joystick ⑯.

**12** Push to blue or green to select another speaker then push to yellow.

**13** Repeat steps 11 to 12 to adjust the sound levels of all the other speakers.

**14** Press the MENU button ⑯ to restore the normal TV screen.

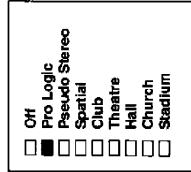
## Teletext

### Presetting Dolby Pro Logic

With Dolby Pro Logic Surround mode selected, you can experience three dimensional sound when watching Dolby Surround encoded programmes. To experience programmes encoded in Dolby Surround sound, preset the surround mode to 'Pro Logic' as shown below.

1 Press **10** on the remote commander.

2 Push joystick **17** to blue or green to select 'Pro Logic'.



3 Press **10** to restore the normal TV screen.

Or alternatively you can select 'Pro Logic' in the surround mode of the 'SOUND CONTROL' menu (see page 20)

### Teletext

Most TV channels broadcast information via teletext. The index page of the broadcaster (usually page 100) gives you information on how to use the service. Make sure you use a TV channel with a strong signal, otherwise teletext errors may occur.

### Switching Teletext on and off

1 Select the channel which carries the teletext service you wish to view.

2 Press **5** to display teletext.  
If no teletext signal is broadcast, the indication P100 is displayed on a black screen.

3 Input three digits for the page number using the number buttons **23**.  
The page counter searches for the page and after some seconds the page is displayed.

4 Press **0** to return to the normal TV picture.

### Using Other Teletext Functions

To Press

Access the next or preceding teletext page **25** for the next page or **26** for the preceding page

Mix the mode **5** when in teletext mode.  
Now the teletext page is superimposed on the TV programme. Press again to return to the normal teletext display.

Freeze a teletext subpage **20**. Press once again to cancel

Reveal hidden information **10**. Press once again to cancel.  
(e.g.: answers to a quiz)

## Favourite page system

You can store up to four of your favourite teletext pages per Teletext service. In this way you have quick access to the pages you frequently use.

### Storing pages

- 1 Use the number buttons **③** to select the page you would like to store.
- 2 Press  $\leftrightarrow$  **①** twice.  
The colour prompts at the bottom of the screen flash.
- 3 Push the joystick **①** to the desired colour to store the selected page.  
The page is now stored on this colour.

Repeat steps 1 to 3 for the other 3 pages.

### Displaying the Favourite Pages

- 1 Press  $\leftrightarrow$  **①**.
- 2 Push the joystick **①** to the colour on which the desired page is stored.

Make sure you press  $\leftrightarrow$  **①**, otherwise the normal Fastext facility operates.

## Using Fastext

(only available, if the TV station broadcasts Fastext signals)

With Fastext you can access pages with one key stroke. When Fastext is broadcast, a colour-coded menu appears at the bottom of the screen. The colours of this menu correspond to the red, green, yellow and blue marks **①** on the Remote Commander.

Push the joystick **①** to the colour mark which corresponds to the colour-coded menu. The page is displayed after some seconds.

## Connecting Optional Equipment

There is a wide range of optional equipment you can connect to your TV. Refer to the illustrations on the front flap page of this manual.

Symbol	Acceptable input signals	Available output signals
$\rightarrow$ 1 <b>■</b>	Normal audio / video and RGB	Audio / video from TV tuner
$\rightarrow$ 2 / $\rightarrow$ 2 <b>■</b>	Normal audio / video and S video	Audio / video from selected source
$\rightarrow$ 3, $\rightarrow$ 3 <b>E</b> $\rightarrow$ 3 <b>C</b>	Normal audio / video and S video	Audio / video from selected source
$\rightarrow$ <b>K</b>	No inputs	Audio from selected source.

### Connecting Headphones

Plug in the headphones to the socket  $\cap$  **A** on the front of the TV.

### About S video input

Video signals may be separated into Y (luminance) and C (chrominance) signals. Separating the two signals prevents interference and thus improves the picture quality.

### Notes on connections:

- If the picture or sound is distorted, move the VCR away from the TV.
- When connecting a monaural VCR, connect only the white jack to both the TV and VCR.
- Select "TV" for output in the "VIDEO CONNECTION" menu if you connect a decoder to  $\rightarrow$  2 /  $\rightarrow$  2 **■** (see page 34).

## Selecting Input and Output Signals

This section explains how to select the output signal from  $\text{G} \rightarrow 2$  /  $\text{G} \rightarrow 2 \text{ M}$  and how to select and view the input. You can use direct access buttons  $\text{D} \rightarrow 2 \text{ M}$  to select the input or the menu system to select input and output.

### Selecting Input Signals With Direct Access Buttons

Press  $\text{D} \rightarrow 2 \text{ M}$  repeatedly.

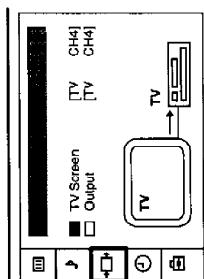
Press  $\text{D} \rightarrow 6$  to restore the normal TV picture.

Symbol on the screen	Input Signal
$\text{G} \rightarrow 1$	Audio/video through Euro AV connector $\text{L}$
$\text{G} \rightarrow 2$	RGB through Euro AV connector $\text{L}$
$\text{G} \rightarrow 2 \text{ M}$	Audio/video through Euro AV connector $\text{M}$
$\text{G} \rightarrow 3$	S video through Euro AV connector $\text{M}$
$\text{G} \rightarrow 3$	Audio/video through the photo jacks $\text{C}$
$\text{G} \rightarrow 3$	S video through the 4 pin DIN $\text{B}$

## Selecting With the Video Connection Menu

1 Press the MENU button  $\text{⑤}$ .

2 Push joystick  $\text{⑦}$  to blue or green to select  $\text{+} \rightarrow$  for "Video Connection" then push to yellow.



3 Push to blue or green to select 'TV Screen' (input source for the TV Screen) or 'Output' (output source for  $\text{G} \rightarrow 2$  /  $\text{G} \rightarrow 2 \text{ M}$ ) then push to yellow  $\text{⑦}$ .

4 Push to red or yellow repeatedly to select the desired input or output source then press the joystick  $\text{⑦}$ .

5 Press the MENU button  $\text{⑤}$  to restore the normal TV picture.

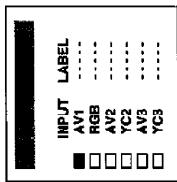
**Note:** If you select 'AUTO' for output, the output source automatically becomes the same as the desired input source.

## Using AV Label Preset

This function enables you to label the input sources using up to five characters (letters or numbers).

1 Press the MENU button  $\text{⑤}$ .

2 Push joystick  $\text{⑦}$  to blue or green to select the symbol  $\text{F}$  on the screen then push to yellow.



3 Push to blue or green to select 'AV Label Preset' then push to yellow.

4 Push to blue or green to select the desired input source then push to yellow.

5 Push to blue or green to select a letter or number then push to yellow (select '-' for a blank). Select the other four characters in the same way.

6 After selecting all the characters, press the joystick  $\text{⑦}$ .

7 Repeat steps 4 to 6 to label other input sources.

8 Press the MENU button  $\text{⑤}$  to restore the normal TV screen.

## Remote Control of Other Sony Equipment

You can control other Sony remote controlled equipment using the buttons **2** on the Remote Commander.

**1** Set the VTR 1/2/3 MDP selector according to the equipment

VTR 1: Beta VCR

VTR 2: 8mm VCR

VTR 3: VHS VCR

MDP: Video Disk Player

**2** Use the buttons **2** to operate the equipment.

**Notes:**

- If your video equipment has a COMMAND MODE selector, set this selector to the same position as the VTR 1/2/3 MDP selector on the TV Remote Commander
- If the equipment does not have a certain function, the corresponding button on the Remote Commander does not work.

## Troubleshooting

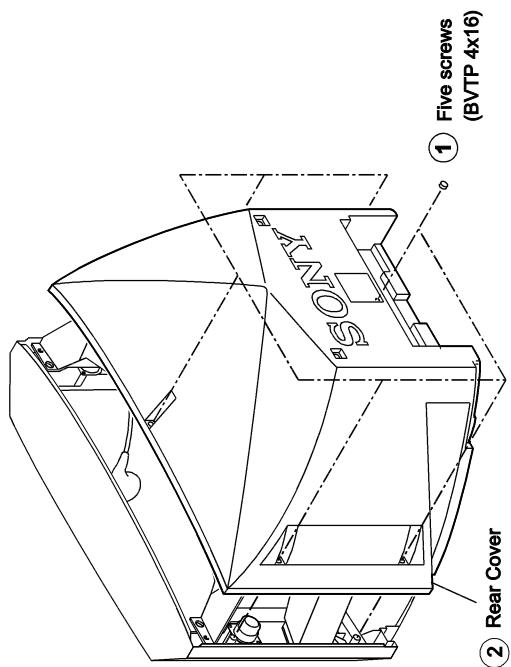
Here are some simple solutions to the problems which affect the picture and sound.

Problem	Solution
No picture (screen is dark), no sound	<ul style="list-style-type: none"> <li>• Plug the TV in.</li> <li>• Press <b>①</b> <b>■</b> on the TV. (If <b>①</b> indicator <b>H</b> is on, press <b>②</b> <b>⑥</b> or a programme number <b>③</b> on the Remote Commander.)</li> <li>• Check the aerial connection.</li> <li>• Check if the selected video source is on.</li> <li>• Turn the TV off for 3 or 4 seconds then turn it on again using <b>①</b> <b>■</b>.</li> </ul>
Poor or no picture (screen is dark), but good sound	<ul style="list-style-type: none"> <li>• Press MENU <b>⑤</b> to enter the 'PICTURE CONTROL' menu and adjust 'Contrast', 'Brightness' and 'Colour'.</li> </ul>
Poor picture quality when watching an RGB video source.	<ul style="list-style-type: none"> <li>• Press <b>②</b> <b>③</b> <b>E</b> repeatedly to select <b>→</b><b>⑤</b>.</li> </ul>
Good picture but no sound	<ul style="list-style-type: none"> <li>• Press <b>④</b> + <b>⑤</b> <b>E</b>.</li> <li>• If <b>⑤</b> is displayed on the screen, press <b>④</b> <b>①</b>.</li> <li>• Check the speaker lead connections.</li> </ul>
No colour for colour programmes	<ul style="list-style-type: none"> <li>• Press MENU <b>⑤</b> to enter the 'PICTURE CONTROL' menu, select 'Reset' then press the joystick <b>①</b>.</li> </ul>
Remote Commander does not function.	<ul style="list-style-type: none"> <li>• Replace the batteries</li> </ul>

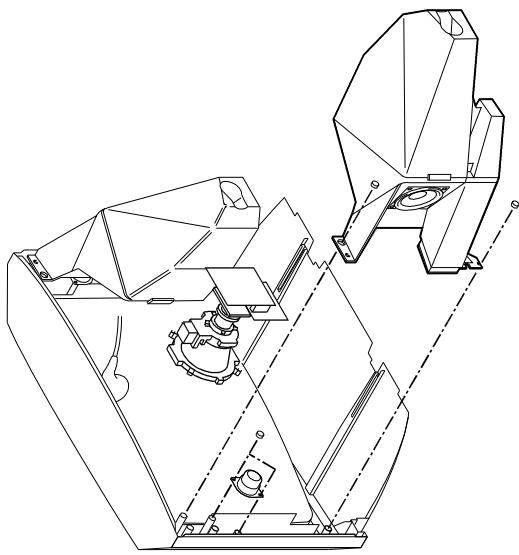
If you continue to have problems, have your TV serviced by qualified personnel.  
Never open the casing yourself.

**SECTION 2**  
**DISASSEMBLY**

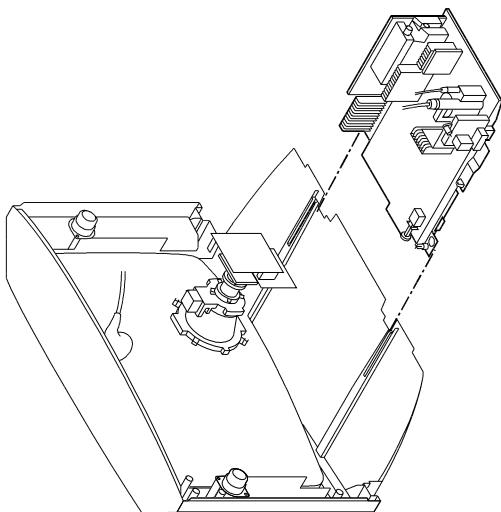
**2-1. REAR COVER REMOVAL**



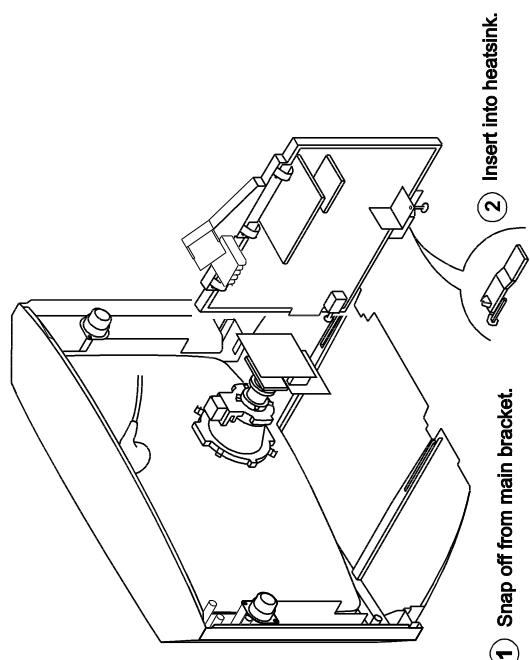
**2-2. SPEAKER REMOVAL**



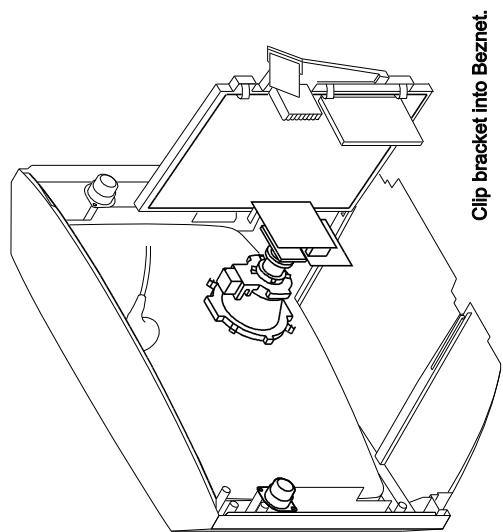
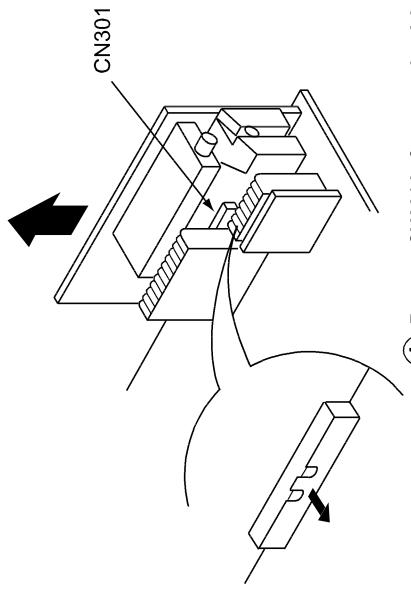
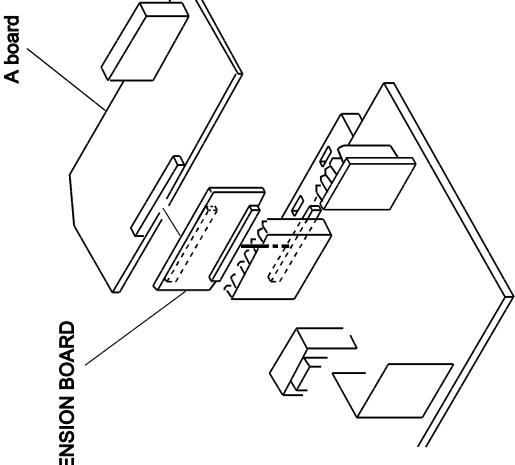
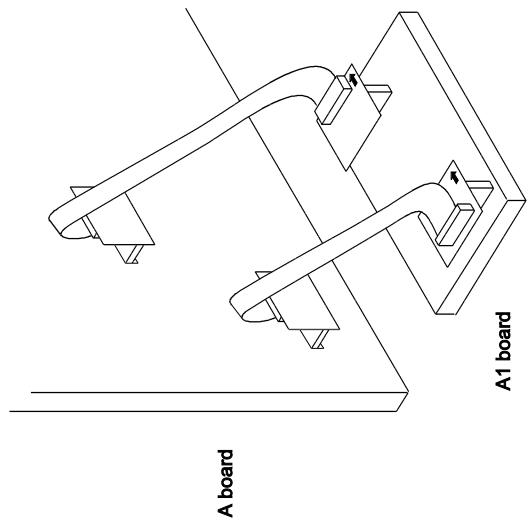
**2-3. CHASSIS ASSY REMOVAL**



**2-4-1. SERVICE POSITION (1)**



- ① Snap off from main bracket.
- ② Insert into heatsink.

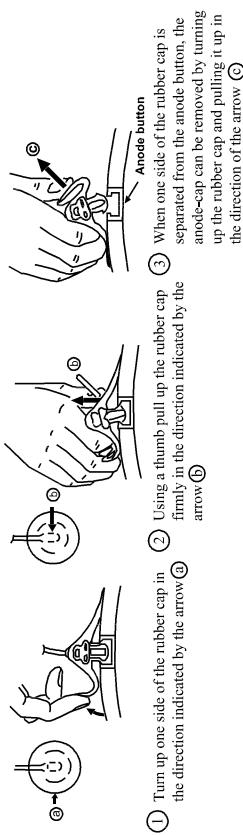
**2-4-2. SERVICE POSITION (2)****2-5. A BOARD REMOVAL****2-6. A EXTENSION BOARD****2-7. A1 EXTENSION BOARDS**

## 2-8. PICTURE TUBE REMOVAL

### • REMOVAL OF ANODE-CAP

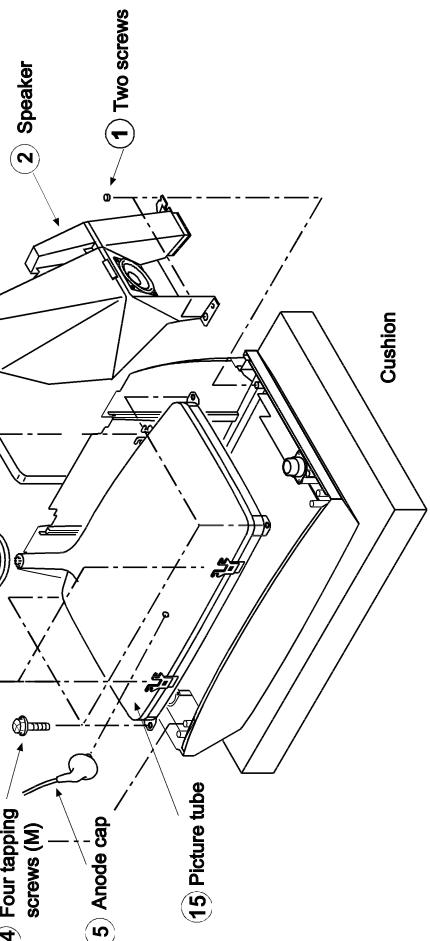
**Note:** Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon paint on the CRT, after removing the anode.

#### \* REMOVING PROCEDURES.



### • HOW TO HANDLE AN ANODE-CAP

- **1** Don't damage the surface of anode-cap with sharp shaped material !
- **2** Don't press the rubber hardly not to hurt inside of anode-caps !
- **3** A metal fitting called as shatter-hook terminal is built into the rubber.
- **4** Don't turn the foot of rubber over hardly !
- **5** The shatter-hook terminal will stick out or damage the rubber.



## REMOVAL AND REPLACEMENT OF THE MAIN-BRACKET BOTTOM PLATES.

### (1) REMOVING THE PLATES

In the event of servicing being required to the solder side of the D Board printed circuit, the bottom plates fitted to the main chassis bracket require to be removed. This is performed by cutting the gates with a sharp wire cutter at the locations shown and indicated by arrows.

**Note :** There are 5 plates fitted to the main bracket and secured by 4 or 6 gates. Only remove the necessary plate to gain access to the circuit board.

### (2) REFITTING THE PLATES

Because the plates differ in size it is important that the correct plates are refitted in their original location.

The plates are identified by markings A-B-C-D-E on their top side.

1. Identify the plate by locating its marking.
2. Turn the plate over, noting where the marking is located.
3. Locate the corresponding marking indicated on the main chassis bracket. See Fig 2.
4. Refit the plate as indicated in Fig 3 with the markings located next to each other.

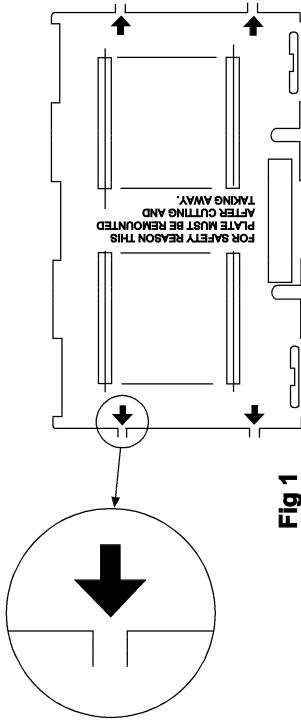


Fig 1

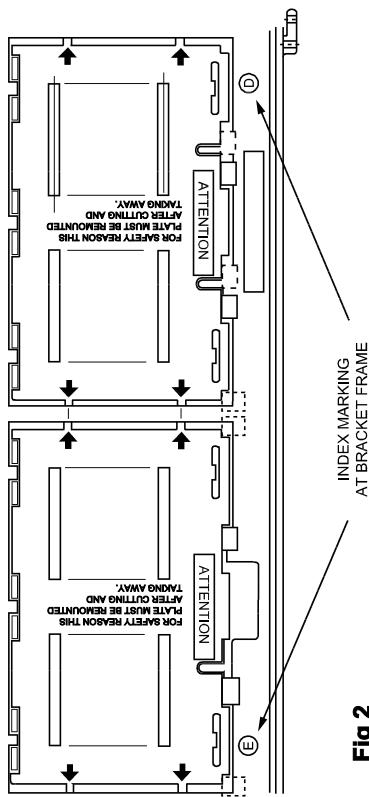


Fig 2

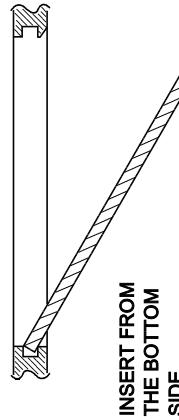


Fig 3

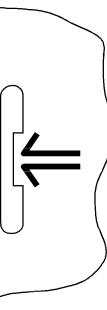


Fig 4

In the event of the plates requiring to be removed at a later stage, this can be achieved by inserting a screwdriver in the snap-recess indicated as in Fig 4 and lifting out.

## SECTION 3

### SET - UP ADJUSTMENTS

- When complete readjustment is necessary or a new picture tube is installed, carry out the following adjustments.
- Unless there are specific instructions to the contrary, carry out these adjustments with the rated power supply.
- Unless there are specific instructions to the contrary, set the controls and switches to these settings :

Contrast ..... 80% (or remote control normal)  
 Brightness ..... 50%

- Carry out the following adjustments in this order :

- Beam landing
- Convergence
- Focus
- White balance

**Note:** Testing equipment required.

- Color bar/pattern generator
- Degausser
- DC power supply
- Digital multimeter
- Oscilloscope

#### Preparation:

- In order to reduce the influence of geomagnetism on the set's picture tube, face it east or west.
- Switch on the set's power and degauss with the degausser.

#### 3-1. BEAM LANDING

- Input the white signal with the pattern generator.  
 CONTRAST } normal  
 BRIGHTNESS }
- Position neck assy as shown in Fig.3-2.
- Set the pattern generator raster signal to red.
- Move the deflection yoke forward and adjust with the purity control so that the red is at the centre and the blue and the green take up equally sized areas on each side. (See Fig. 3-1 - 3-3)
- Move the deflection yoke forward and adjust so that the entire screen becomes red. (See Fig. 3-1)
- Switch the raster signal to blue, then to green and verify the condition.
- When the position of the deflection yoke has been decided, fasten the deflection yoke with the screws.
- If the beam does not land correctly in all the corners, use a magnet to adjust it. (See Fig. 3-4)

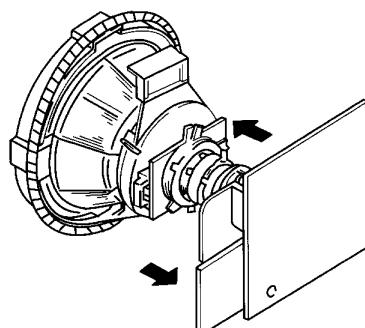


Fig. 3-1

Fig. 3-2

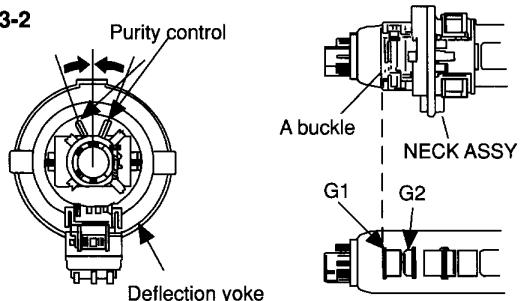


Fig. 3-3

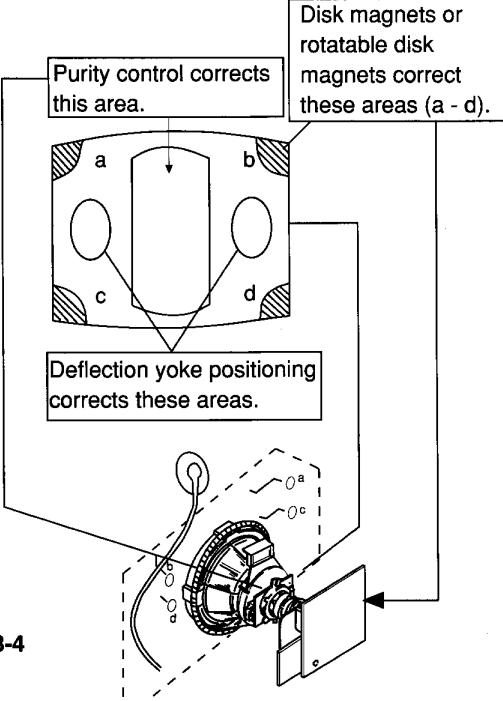
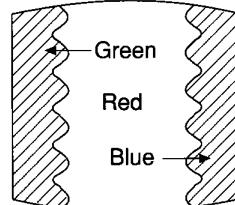


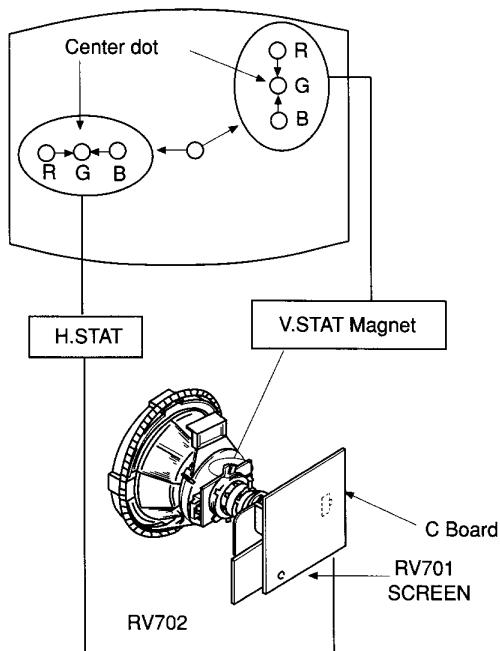
Fig. 3-4

### 3-2. CONVERGENCE

#### Preparation:

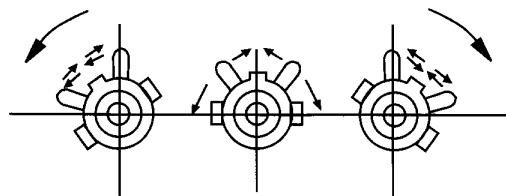
- Before starting this adjustment, adjust the focus, horizontal size, and vertical size.
- Minimize the brightness setting.
- Provide a dot pattern.

#### (1) Horizontal and vertical static convergence

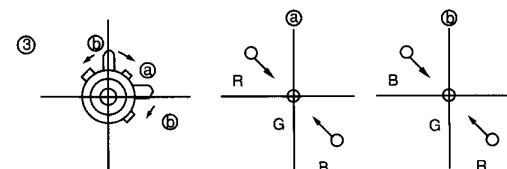
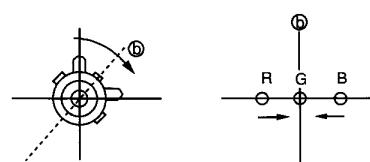
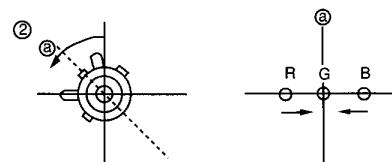
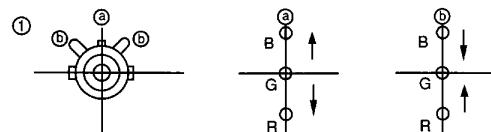


- (Moving horizontally), adjust the H.STAT control so that the red, green, and blue points are on top of each other at the centre of the screen.
- (Moving vertically), adjust the V.STAT magnet so that the red, green, and blue points are on top of each other at the centre of the screen.
- If the H.STAT variable resistor cannot bring the red, green, and blue points together at the centre of the screen, adjust the horizontal convergence with the H.STAT variable resistor and the V.STAT magnet in the manner given below.  
(In this case, the H.STAT variable resistor and the V.STAT magnet influence each other)

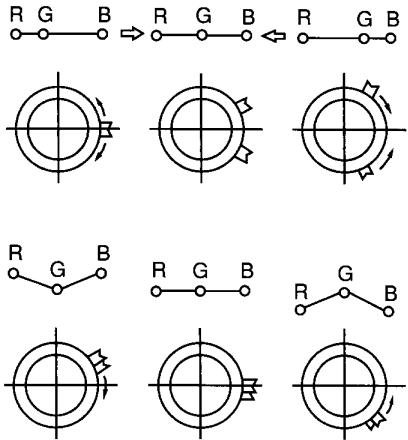
- Tilt the V.STAT magnet and adjust the static convergence by opening or closing the V.STAT magnet.



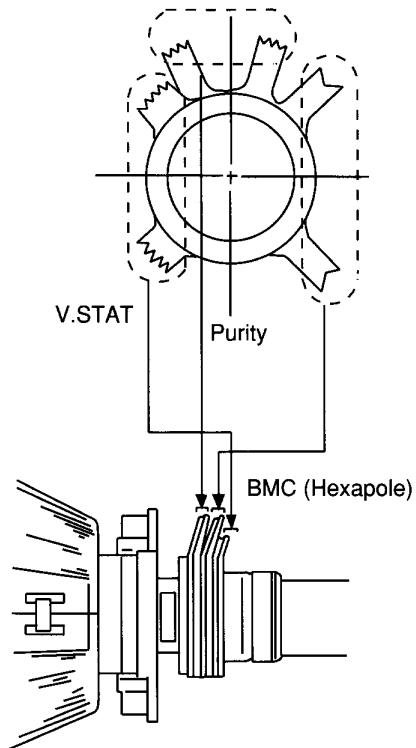
- If the V.STAT magnet is moved in the direction of the (a) and (b) arrows, the red, green, and blue points move as shown below.



- Operation of BMC (Hexapole) Magnet



- The respective dot position resulting from moving each magnet interact, so be sure to perform adjustment while tracking.  
Use the H.STAT VR to adjust the red, green, and blue dots so they coincide at the centre of the screen (by moving the dots in the horizontal direction).

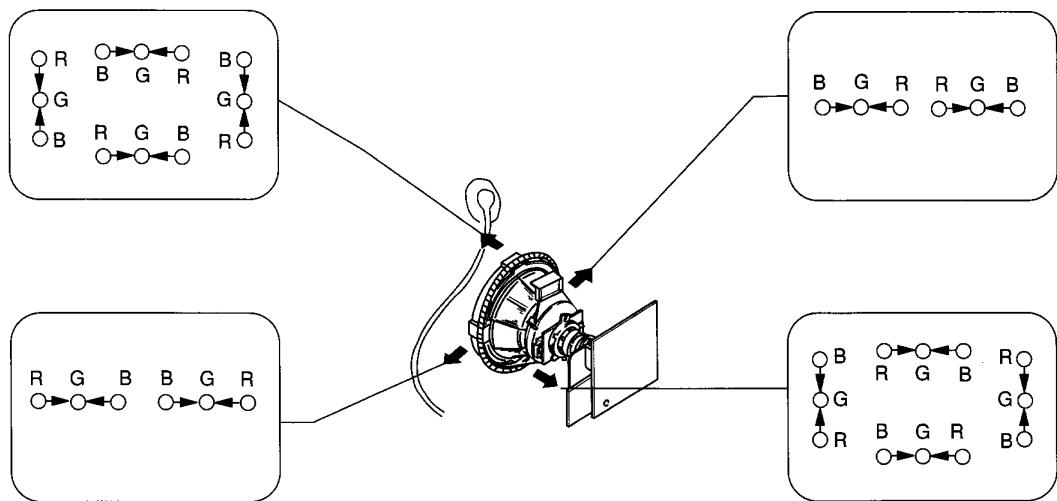


## (2) Dynamic convergence adjustment.

### Preparation:

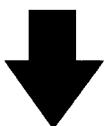
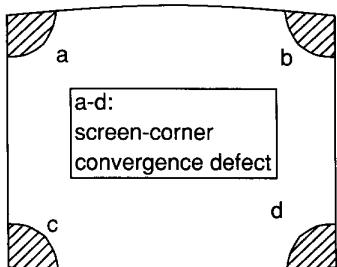
- Before starting this adjustment, adjust the horizontal static convergence and the vertical static convergence.
- Slightly loosen the deflection yoke screws.

- Remove the deflection yoke spacer.
- Move the deflection yoke as shown in the figure below and optimize the convergence.
- Tighten the deflection yoke screws.
- Re-install the deflection yoke spacer.

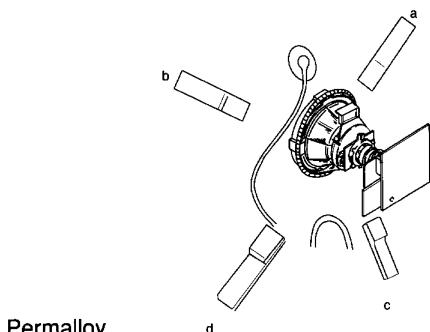


**(3) Screen corner convergence.**

If you are unable to adjust the corner convergence properly, correct them with the use of permalloy assemblies.



Install the permalloy assembly  
for the section with fault

**3-3. WHITE BALANCE****G2 Setting**

1. Switch the set into AV mode (apply no signal to the AV connectors).
2. Connect a Volt Meter to Test Point 1 on the A board.
3. Adjust RV01 to obtain a voltage of  $3.0V \pm 0.3V$ .

**White balance adjustment**

1. Input an all white signal from the pattern generator.
2. Enter into the service mode.
3. Enter into Picture Adjustment service menu.
4. Select sub-contrast and adjust to 7.
5. Select the Green Drive and adjust so that the white balance becomes optimum.
6. Select the Blue Drive and adjust so that the white balance becomes optimum.
7. Press the TV button to return to TV operation.

**PICTURE ADJUSTMENT**

AFC mode	1
REF position	2
SCP BGR	1
SCP BGF	1
Trap Fo	0
Sub contrast	Adj
Sub colour	Adj
Sub brightness	Adj
Sub hue	Adj
Green drive	Adj
Blue drive	Adj
Green cutoff	Adj
Blue cutoff	Adj
Gamma	0
Pre / overshoot	0
Y delay	3

## SECTION 4

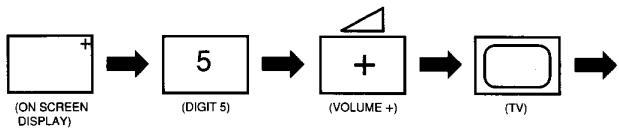
### CIRCUIT ADJUSTMENTS

#### 4-1. ELECTRICAL ADJUSTMENTS

Service adjustment to this model can be performed with the supplied remote commander RM-862.

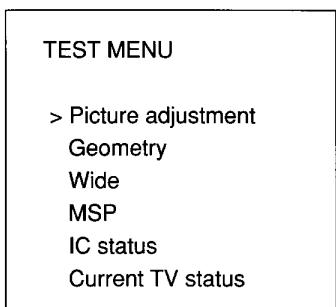
##### HOW TO ENTER INTO SERVICE MODE

1. Turn on the main power switch of the set and enter into standby mode.
2. Press the following sequence of buttons on the Remote Commander.



"TT--" will appear in the top right corner of the screen. Other status information will also be displayed.

3. Press MENU on the commander to obtain the following menu on the screen.



4. Move to the corresponding adjustment using the  $\leftrightarrow$  button on the commander.
5. Move the button to the right  $\rightarrow$  to enter the selected adjustment.
6. Turn off the power to quit the service mode when adjustments are completed.

##### PICTURE ADJUSTMENT

AFC mode	1
REF position	2
SCP BGR	1
SCP BGF	1
Trap Fo	0
Sub contrast	Adj
Sub colour	Adj
Sub brightness	Adj
Sub hue	Adj
Green drive	Adj
Blue drive	Adj
Green cutoff	Adj
Blue cutoff	Adj
Gamma	0
Pre / overshoot	0
Y delay	3

##### GEOMETRY ADJUSTMENT

V Size	Adj
V Position	Adj
S Correction	Adj
V Linearity	Adj
H Size	Adj
H Position	Adj
Pin Amp	Adj
Pin Phase	Adj
AFC Bow	Adj
AFC Angle	Adj
EHT V	Adj
EHT H	Adj
Corner Pin	Adj

##### WIDE

V Aspect	47
V Scroll	31
Upper V Lin	0
Lower V Lin	0
Left Blanking	1
Right Blanking	11

MSP	
AGC ON/OFF	ON
Constant gain CDB	0
FM prescale FMP	36
Zwei mono-st WHI	36
Zwei st-mono WLO	18
Zwei mono-bi WMH	36
Zwei bi-mono WLO	18
Time zwei WML	51
Fawct limit	10
Fawct soll init FAW	12
Fawer tol	2
Nicam Err Max CCT	10
Nicam Err Min	0
Nicam Prescale NIP	97
Time Nicam	31
Carrier mute CRM	OFF
Audio clock ACO	HIZ
Scart prescale	25
Scart volume	64

IC STATUS (CXA2000 / CXA2040)	
<u>CXA2000</u>	
H lock	1
IKR	1
VNG	0
X-RAY	0
Colour system	3
CV1 Sync	1
<u>CXA2040</u>	
Sync sep	1
S1 mode pin	01
S2 mode pin	01
<u>TUNER</u>	
Tuner status	01101011

TV STATUS	
Text system	C TEXT/TV TEXT
Dolby	NO/YES
Text language set	WEST/EAST/RUSSIAN
Menu language set	WEST/EAST/RUSSIAN
Destination	B/D/U/K/L/E/A/R
Scart 16:9	OFF/ON
RGB priority	OFF/ON
Ageing	OFF/ON
Size	28/24
Colour trap sw	SECAM/ALL
Velocity mod	ON/OFF
AFT STATUS	WINDOW/HIGH/LOW

#### SUB BRIGHTNESS ADJUSTMENT

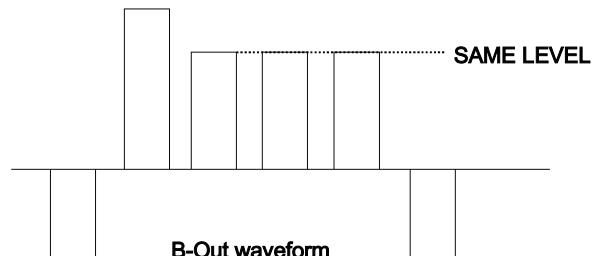
1. Input a Phillips pattern.
2. Set the picture control to minimum.
3. Enter into the Picture Adjustment Service Menu.
4. Adjust the Sub-Brightness data so that there is barely a difference between the 0 IRE and 10 IRE signal.

#### SUB CONTRAST ADJUSTMENT

1. Input a video that contains a small 100% area on a black background.
2. Set the picture control to maximum.
3. Connect an oscilloscope to pin 3 of CN301 (A board).
4. Enter into the Picture Adjustment Service Menu.
5. Adjust the Sub-contrast data to obtain a black to white amplitude of 2.50 volts.

#### SUB COLOUR ADJUSTMENT

1. Receive a PAL Colour Bar video signal.
2. Connect an oscilloscope to pin 3 of CN301 (A board).
3. Enter into the Picture Adjustment Service Menu.
4. Adjust the sub colour data so that cyan, magenta and blue colour bars are of equal height.



NOTE: The data shown in the TV STATUS table is dependant on destination, screen size and country.

**SYSTEM B/G, D/K, I & L I.F ADJUSTMENT**

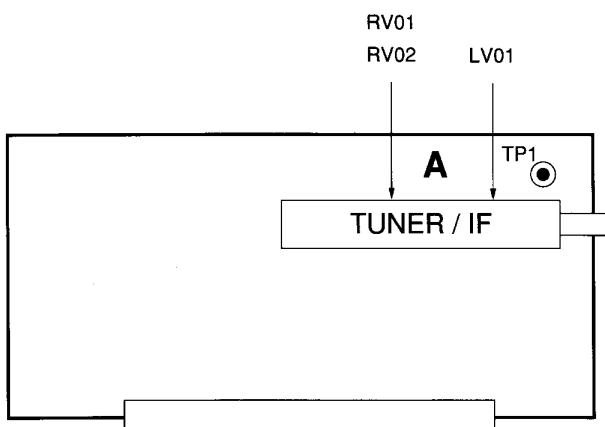
1. Input an off air signal of between 60-100dBuV / 75 ohm terminated, via the tuner socket.
2. Enter into the I.F adjustment service mode (i.e. " TT 59 " ) to fix the I.F frequency to 38.9 MHz.
3. Enter into the service mode and select "Current TVStatus".
4. Adjust the I.F coil (LV01) until the "AFT Status" indicates a " Window " condition.

**SYSTEM L BAND 1 I.F ADJUSTMENT**

1. Input an off air signal of between 60-100dBuV / 75 ohm terminated, via the tuner socket.
2. Enter into the I.F adjustment service mode (i.e. " TT 59 " ) to fix the I.F frequency to 34.2 MHz.
3. Enter into the service mode and select "Current TVStatus".
4. Adjust the RV02 until the "AFT Status" indicates a " Window " condition.

**TUNER AGC ADJUSTMENT**

1. Receive a signal of 63dBuV / 75 ohm terminated via the tuner socket.
2. Measure the voltage at test point 1 (A board).
3. Adjust RV01 to obtain a voltage of  $3.0V \pm 0.3V$ .



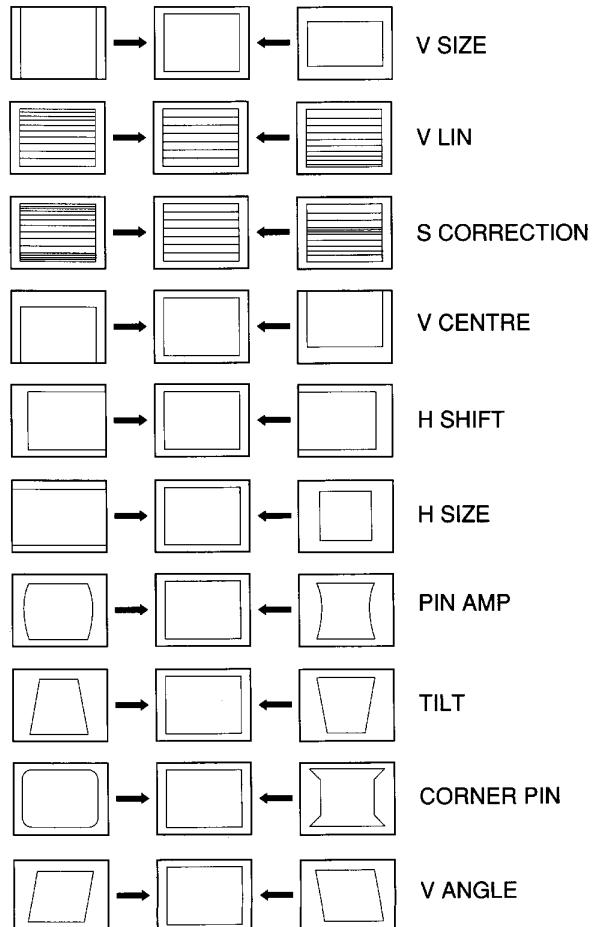
- A Board component side -

**DEFLECTION SYSTEM ADJUSTMENT**

1. Enter into the Geometry Adjustment Service Menu.
2. Select and adjust each item in order to obtain the optimum image.

**GEOMETRY ADJUSTMENT**

V Size	Adj
V Position	Adj
S Correction	Adj
V Linearity	Adj
H Size	Adj
H Position	Adj
Pin Amp	Adj
Pin Phase	Adj
AFC Bow	Adj
AFC Angle	Adj
EHT V	Adj
EHT H	Adj
Corner Pin	Adj



## 4-2. TEST MODE 2:

Is available by pressing Test button twice, OSD " TT " appears. The functions described below are available by pressing the two numbers. To release the Test mode 2, press 0 twice, or switch the TV into stand-by mode.

00	Switch test mode 2 off	46	IR channel presetting mode. The channel presetting can be done by a speacial IR transmitter (dealer commander.)
01	Picture maximum.	47	Reset NVM testbyte.
02	Picture minimum.	48	Set NVM testbyte to 44h.
03	Volume 35%	49	Erase the NVM test byte (This byte detects already stored NVM's). After selecting this function, switch TV off and on, the NVM will be preset by the micro controller.
04-05	Dummy	50	Tenth entry is deleted.
06	Volume 80%	51	Text interlace ODD.
07	Set ageing Condition (Volume min., Picture max., Brightness max)	52	Text interlace EVEN.
08	Shipping Condition (Analog Values are RESET due to factory setting, Prog 1 is selected, TT mode is switched off.)	53	Auto picture on.
09	'Menu' Flag reset	54	Auto picture off.
10	Tenth entry is deleted.	55	Auto cutoff enable.
11-12	Dummy	56	Auto cutoff disable.
13	Forced AV 16:9 detection on/off	57-58	Dummy
14	Display TV configuration	59	Lock to centre frequency.
15	Read factory setting from NVM, reads Volume, Balance, Treble, Bass, Brightness, Contrast, Hue, Sharpness, Colour values from ROM to the actual used values (Last power memory).	60	Tenth entry is deleted.
16	Dummy	61	Turn on Dolby Prologic mode.
17	Preset label for AV Sources.	62	White noise to left speaker.
18	RGB Priority on/off.	63	White noise to right speaker.
19	Clear all preset labels.	64	White noise to centre speaker.
20	Tenth entry is deleted.	65	White noise to surround speaker.
21	Sub Contrast.	66	Set standard stereo mode.
22	Sub Colour.	67	Set prologic normal mode.
23	Sub Brightness.	68	Set prologic wide mode.
24	Set destination = U RGB Priority = off.	69	Set prologic phantom mode.
25	Set destination = D RGB Priority = off.	70	Tenth entry is deleted.
26	Set destination = B RGB Priority = on.	71	Lumisponder mode 1
27	Set destination = K RGB Priority = off.	72	Lumisponder mode 2
28	Set destination = L RGB Priority = off.	73	Lumisponder off
29	Set destination = E RGB Priority = off.	74	Text centre adjustment
30	Tenth entry is deleted.	75	Reset picture settings
31	Set destination = A RGB Priority = on.	76	Dummy
32	Set destination = R	77	Reset sound settings
33-35	Dummy	78-79	Dummy
36	Rotation coil test	80	Tenth entry is deleted.
37	Select 25" chassis	81	VM on.
38	Select 25" chassis	82	VM off.
39	Trap SW select	83	Set picture blanking lever delay 40ms.
40	Tenth entry is deleted.	84	Set picture blanking lever delay 80ms.
41	Re-initialise NVM.	85	Set picture blanking lever delay 160ms.
42	Default program into NVM.	86-89	Dummy.
43	Initialise CXA2000 settings.	90	Tenth entry is deleted.
44	Initialise all favorite pages to be 100.	91-99	Dummy.
45	Channel locks off.		

Note : In Test Mode the Menu display is switchable by the speaker mute (off) button.

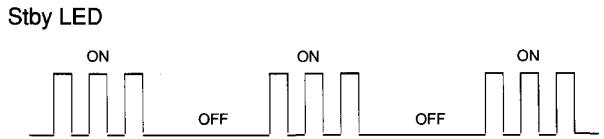
#### 4-3. BE-3D SELF DIAGNOSTIC SOFTWARE

The identification of errors within the BE-3D chassis is triggered in 1 of 2 ways :- 1: Bus busy or 2: Device failure to respond to IIC. In the event of one of these situations arising the software will first try to release the bus if busy (Failure to do so will report with continuous flashing LED) and then communicate with each device in turn to establish if a device is faulty. If a device is found to be faulty the relevant device number will be displayed through the led (Series of flashes which must be counted) See Table 1, non fatal errors are reported with this method.

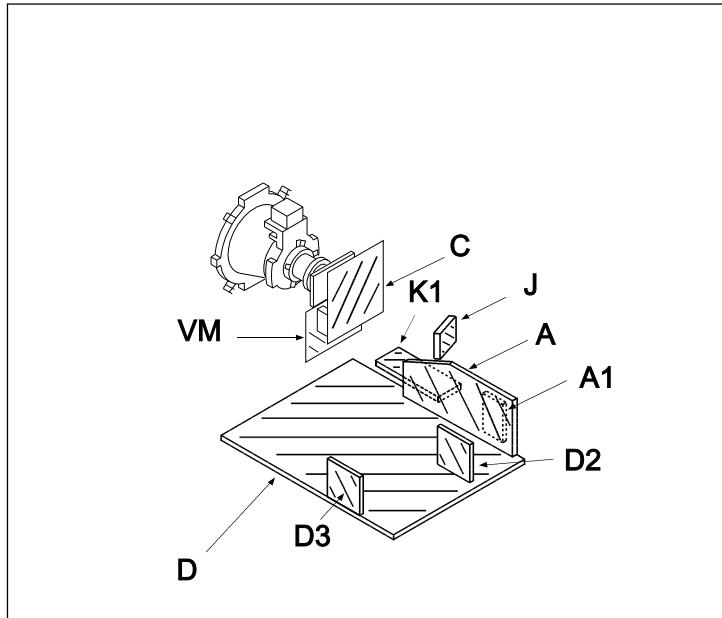
Table 1

### Flash Timing Example : e.g. error number 3.

ERROR	LED ERROR COUNT
Protection circuit trip < ANY TIME >	02
IIC SCL LOW < POWER UP ONLY >	03
IIC SDA LOW < POWER UP ONLY >	04
IIC SDA & SCL LOW < POWER UP ONLY >	05
Jungle/Chorama controller no acknowledge < POWER UP ONLY >	06
Video Switch no acknowledge < POWER UP ONLY >	07
Tuner no acknowledge	08
MSP no acknowledge	09
NVM no acknowledge	10
M3L TXD LOW < POWER UP ONLY >	11
M3L RXD LOW < POWER UP ONLY >	12
M3L ENABLE LOW < POWER UP ONLY >	13
M3L TXD & RXD LOW < POWER UP ONLY >	14
Compact Text test fail < POWER UP ONLY >	15
AV switch cannot power on reset	16
Cannot initialise jungle	17
NVM acknowledge fail after initialisation	18
Multiple devices with no acknowledge < POWER UP ONLY >	19
Compacttext run-time failure	20
AVSWITCH response failure after power up	21
JUNGLE/CHROMA controller response failure after power up	22
CompactText does not respond	23



## 5-2. CIRCUIT BOARDS LOCATION



## 5-3. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

### Note :

- All capacitors are in  $\mu\text{F}$  unless otherwise noted. pF:  $\mu\mu\text{F}$   
50WV or less are not indicated except for electrolytic and tantalums.
- All resistors are in ohms.  
 $k = 1000$ ,  $M = 1000\text{K}$
- Indication of resistance, which does not have one for rating electrical power, is as follows.

Pitch : 5 mm  
Rating electrical power  $\frac{1}{4}$  W

- : nonflammable resistor.
- : internal component.
- : panel designation, or adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : earth - ground.
- : earth - chassis.
- : no mounted.

Note : The components identified by shading and marked are critical for safety. Replace only with the part number specified.

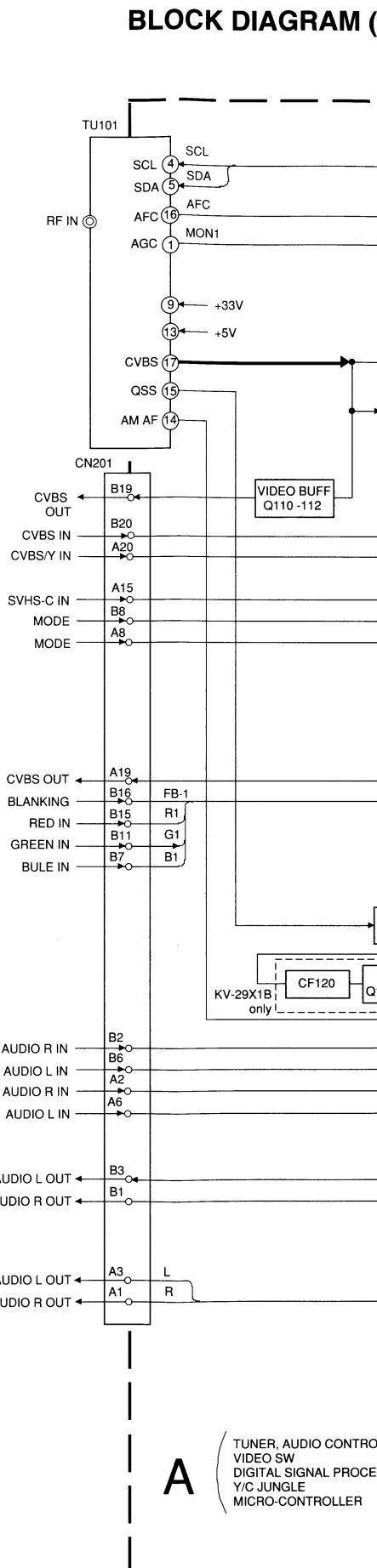
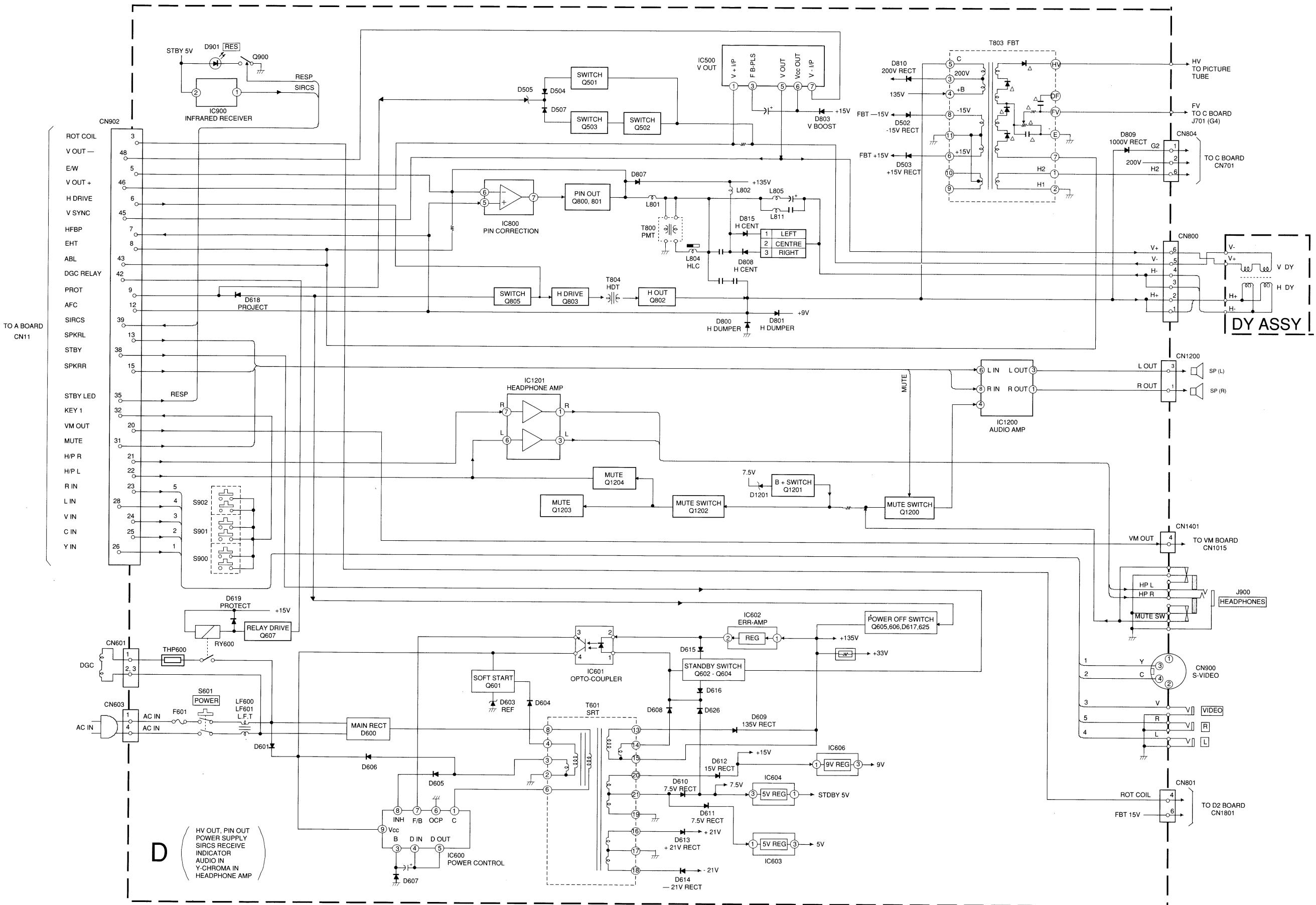
Note : Les composants identifiés par une trame et une marque sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

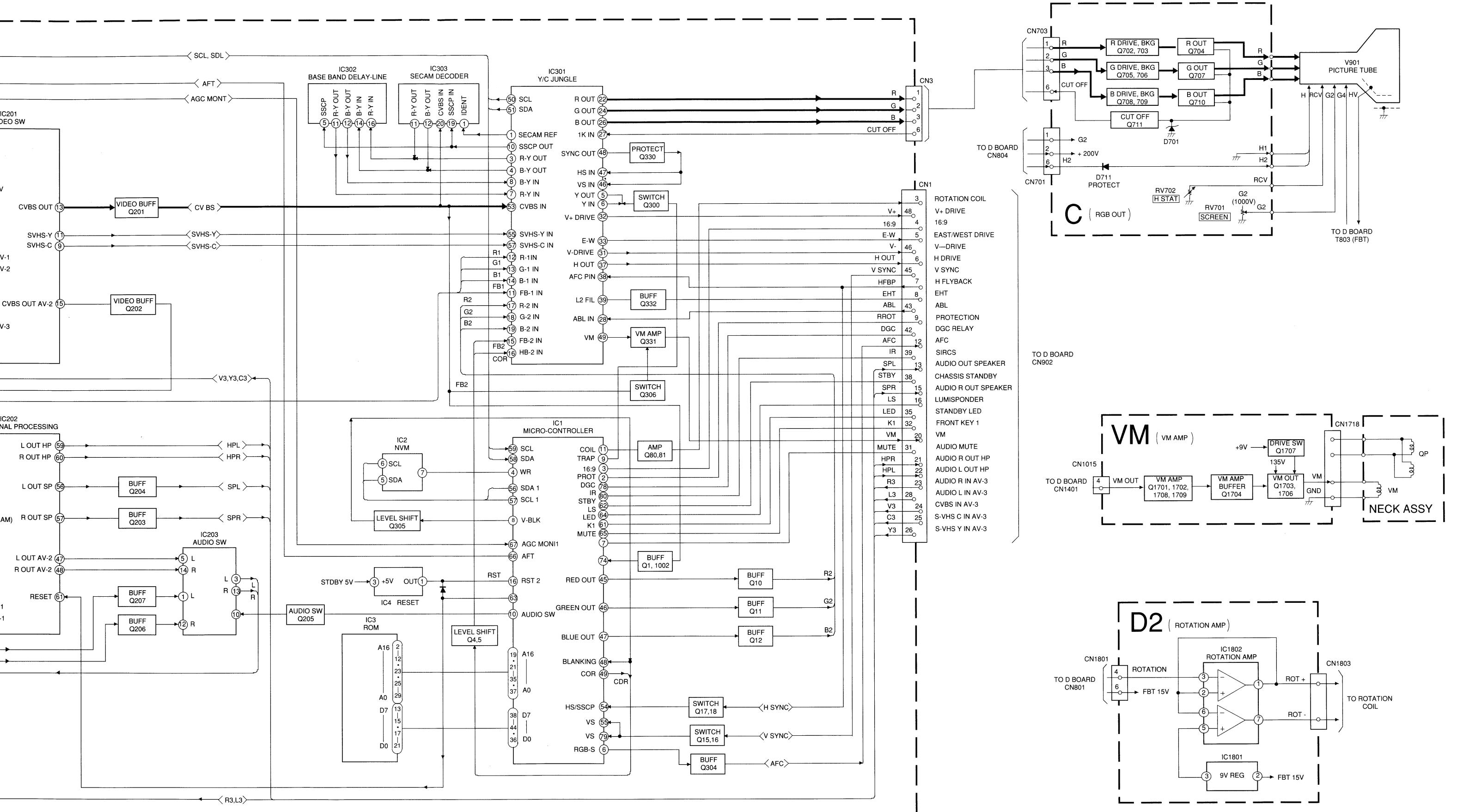
### Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RS	NONFLAMMABLE METAL OXIDE
	: RB	NONFLAMMABLE CEMENT
	: RW	NONFLAMMABLE WIREWOUND
	: $\times$	ADJUSTABLE RESISTOR
COIL	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

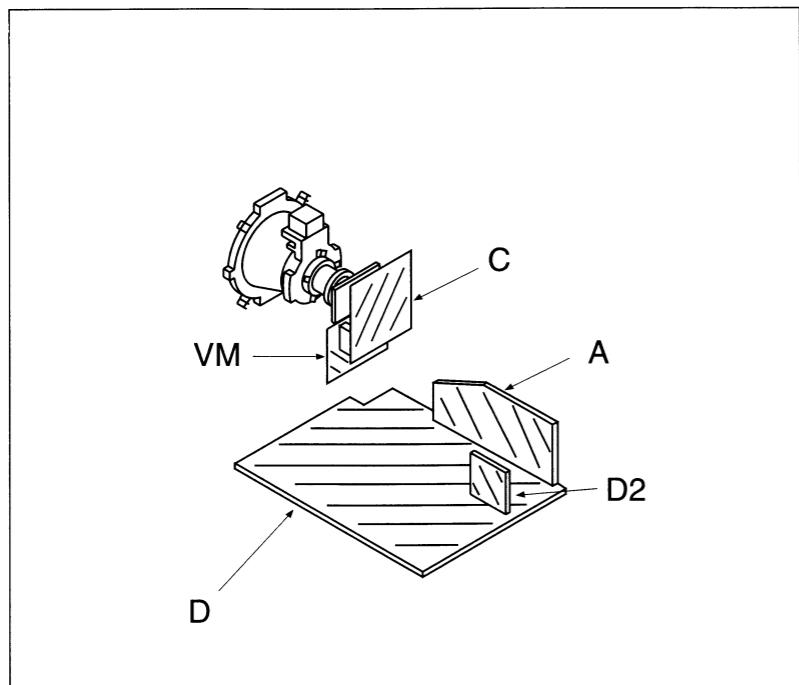
- Readings are taken with a colour-bar signal input.
- Readings are taken with  $10\text{M}\Omega$  digital multimeter.
- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V.
- Circled numbers are waveform references.
- : B+ bus.
- : signal path. (RF)

## 5-1. BLOCK DIAGRAM (1)





## 5-2. CIRCUIT BOARDS LOCATION



## 5-3. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

## Note :

- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\mu\text{F}$  50WV or less are not indicated except for electrolytic and tantalums.
- All resistors are in ohms.  
 $k = 1000$ ,  $M = 1000\text{K}$
- Indication of resistance, which does not have one for rating electrical power, is as follows.

Pitch : 5 mm  
Rating electrical power  $\frac{1}{4} \text{ W}$

- : nonflammable resistor.
- : internal component.
- : panel designation, or adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : earth - ground.
- : earth - chassis.
- : no mounted.

**Note :** The components identified by shading and marked are critical for safety. Replace only with the part number specified.

**Note :** Les composants identifiés par une trame et une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

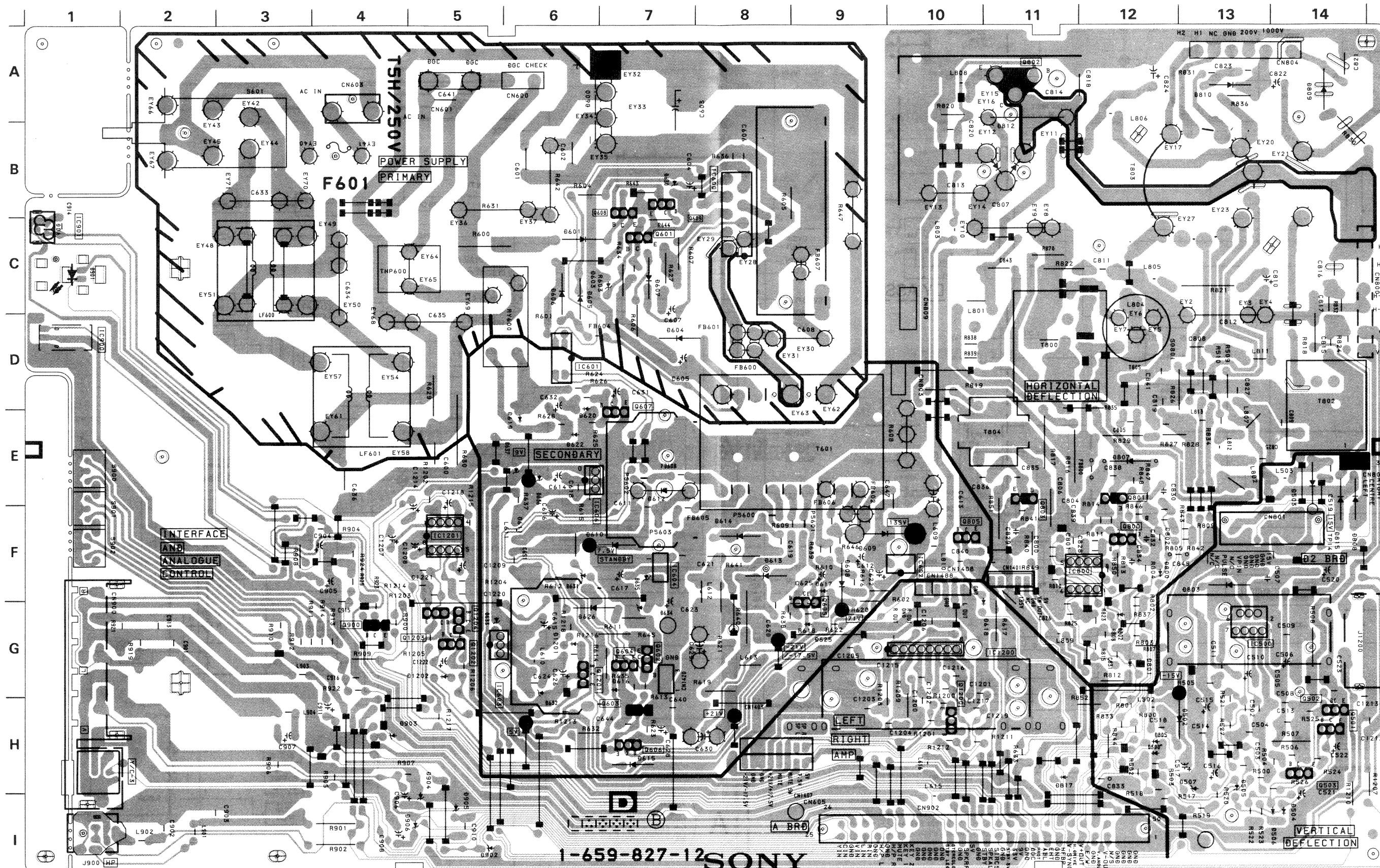
## Reference information

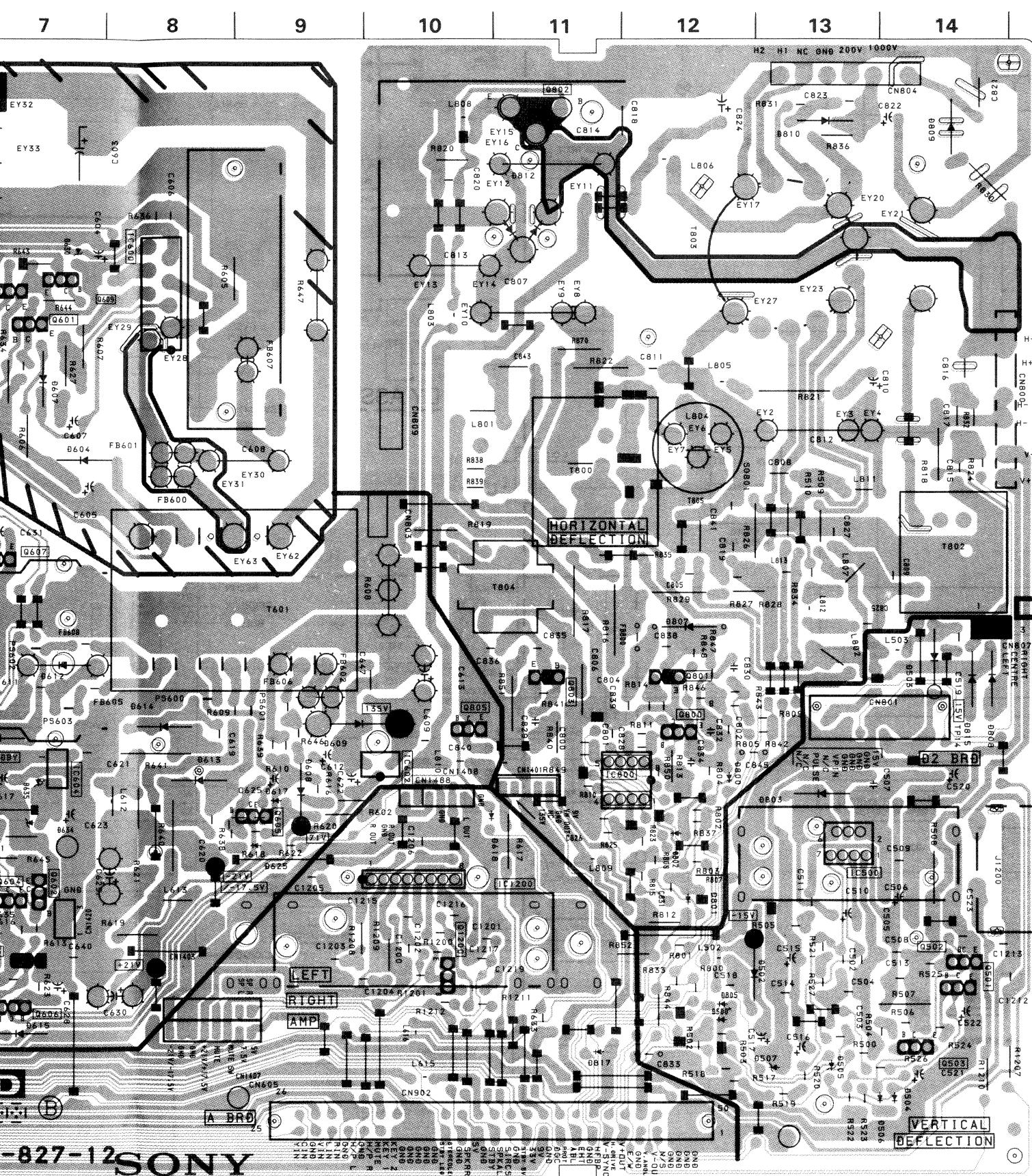
RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RS	NONFLAMMABLE METAL OXIDE
	: RB	NONFLAMMABLE CEMENT
	: RW	NONFLAMMABLE WIREWOUND
	: $\times$	ADJUSTABLE RESISTOR
COIL	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

- Readings are taken with a colour-bar signal input.
- Readings are taken with  $10\text{M}\Omega$  digital multimeter.
- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V.
- Circled numbers are waveform references.
- : B+ bus.
- : signal path. (RF)

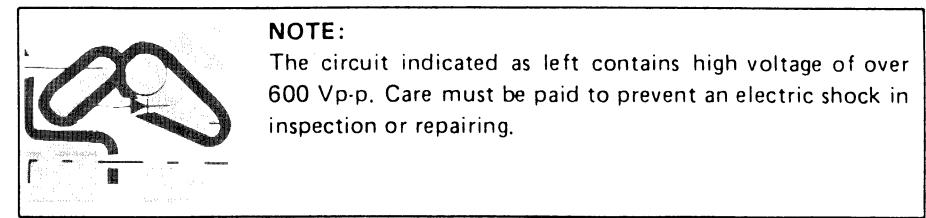
— HV OUT, PIN OUT, POWER SUPPLY, CONTROL SW, AUDIO IN  
— Y-CHROMA IN, HEADPHONE IN, SIRCS RECEIVE, INDICAITON

## D Board



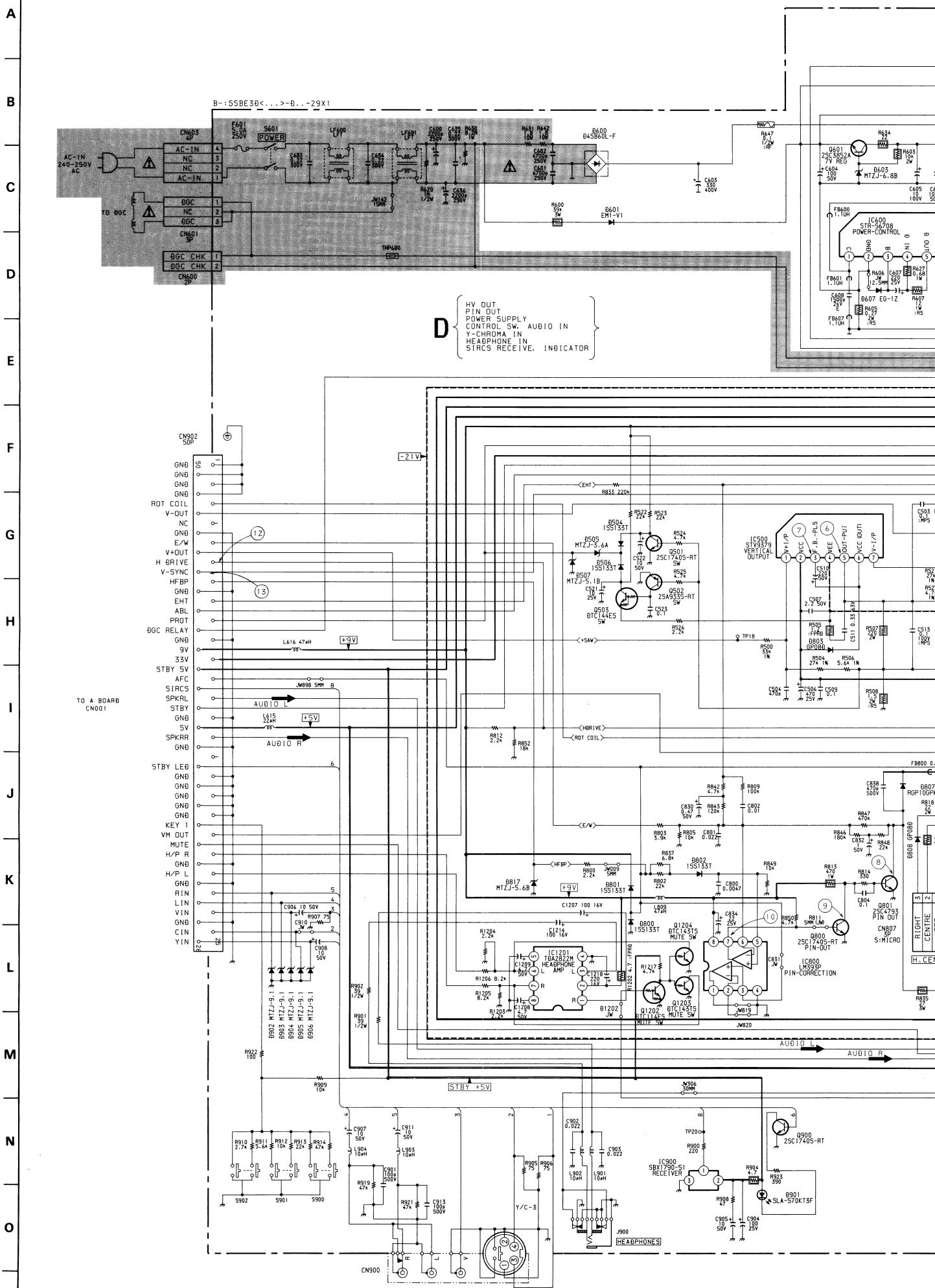


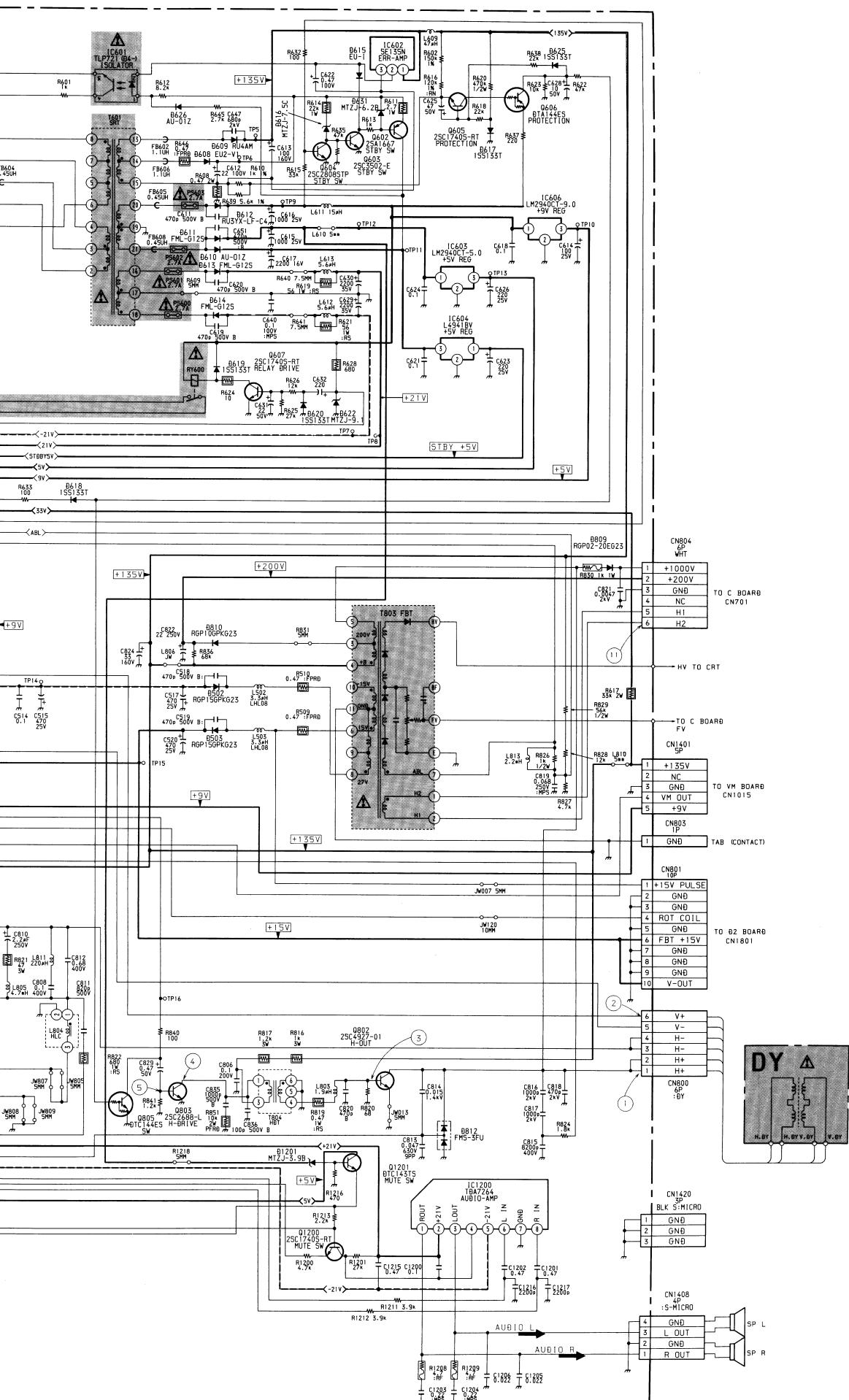
-827-12 SONY



## D BOARD

IC	DIODE
IC500	G-13
IC600	B-8
IC601	D-6
IC602	F-10
IC603	G-5
IC604	F-7
IC606	E-6
IC800	F-12
IC900	D-1
IC1200	G-10
IC1201	F-5
	D600 A-7
	D601 C-6
	D603 C-7
	D604 D-7
	D605 C-6
	D606 C-6
	D607 C-7
	D608 F-9
	D609 F-9
	D610 F-7
	D611 F-6
	D612 E-7
	D613 F-8
	D614 F-8
	D615 H-7
	D616 G-7
	D617 F-9
	D618 F-11
	D619 E-6
	D620 E-6
	D622 E-6
	D625 G-9
	D626 G-6
	D631 F-6
	D800 F-12
	D800 F-12
	D801 G-12
	D802 G-12
	D803 F-13
	D807 E-12
	D808 E-14
	D809 A-14
	D810 A-13
	D812 B-11
	D815 E-14
	D817 H-11
D500	H-12
D502	H-13
D503	I-14
D504	H-11
D505	H-13
D506	I-14
D507	H-13
	D901 C-1
	D902 I-5
	D903 H-4
	D904 H-5
	D905 I-5
	D906 I-5
	D1201 G-6



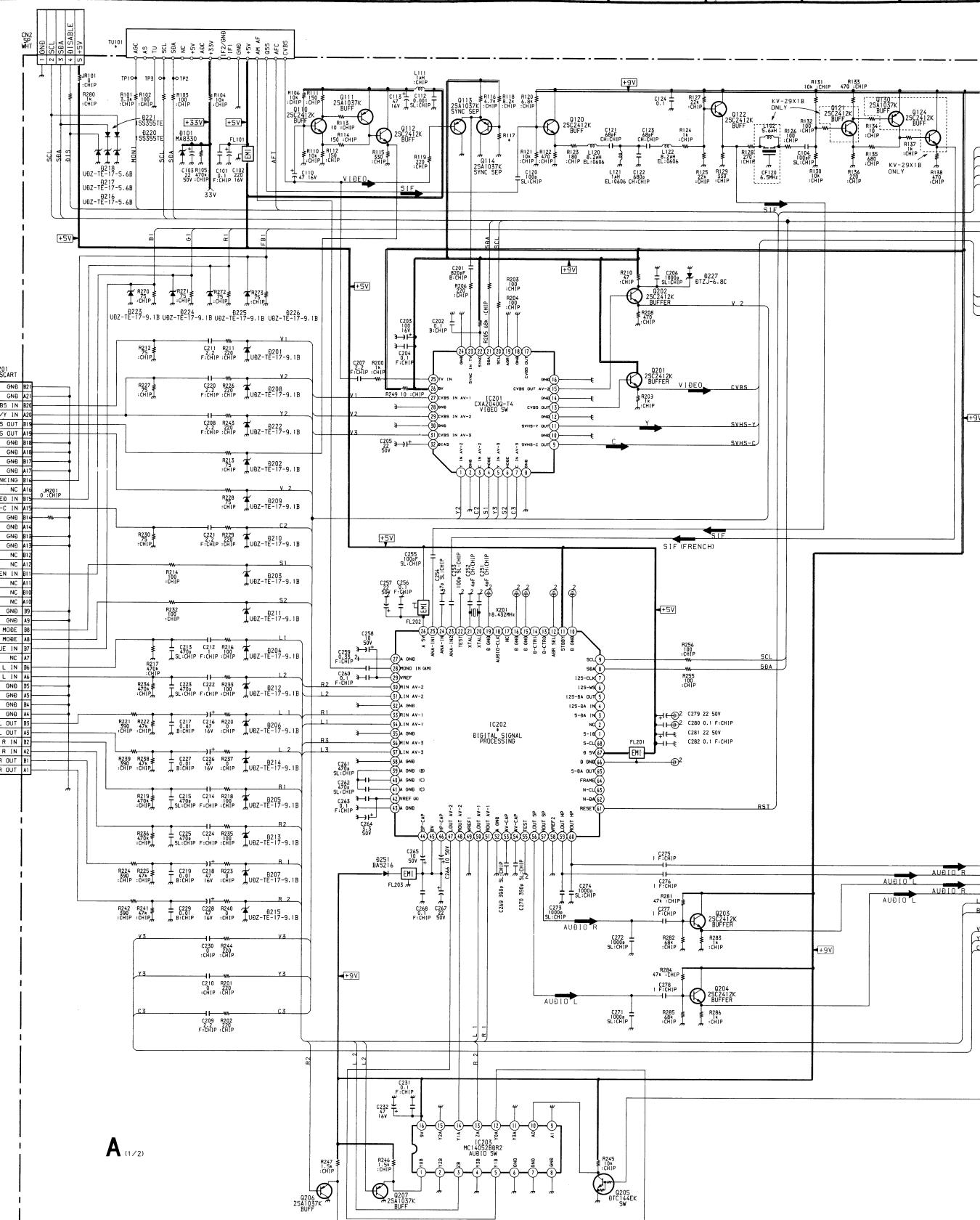


**D BOARD  
TRANSISTOR VOLTAGE TABLE**

Transistor Voltage Table			
Ref No	B Base	C Collector	E Emitter
Q501	-0.1	0.2	-
Q502	0.1	-5.8	-
Q503	-5.8	-12.0	-12.0
Q602	72.0	7.5	72.7
Q603	0	72.0	-
Q604	0.7	-	-
Q605	0.5	-	0.3
Q606	-	-	12.0
Q607	-	12.0	-
Q800	0.2	3.1	-
Q801	0.3	17.0	-
Q802	-0.2	143.3	-
Q803	-0.6	99.8	-
Q805	-	3.6	-
Q900	-	5.4	-
Q1200	2.9	21.5	4.6
Q1201	3.4	5.0	3.0
Q1202	2.8	-	-

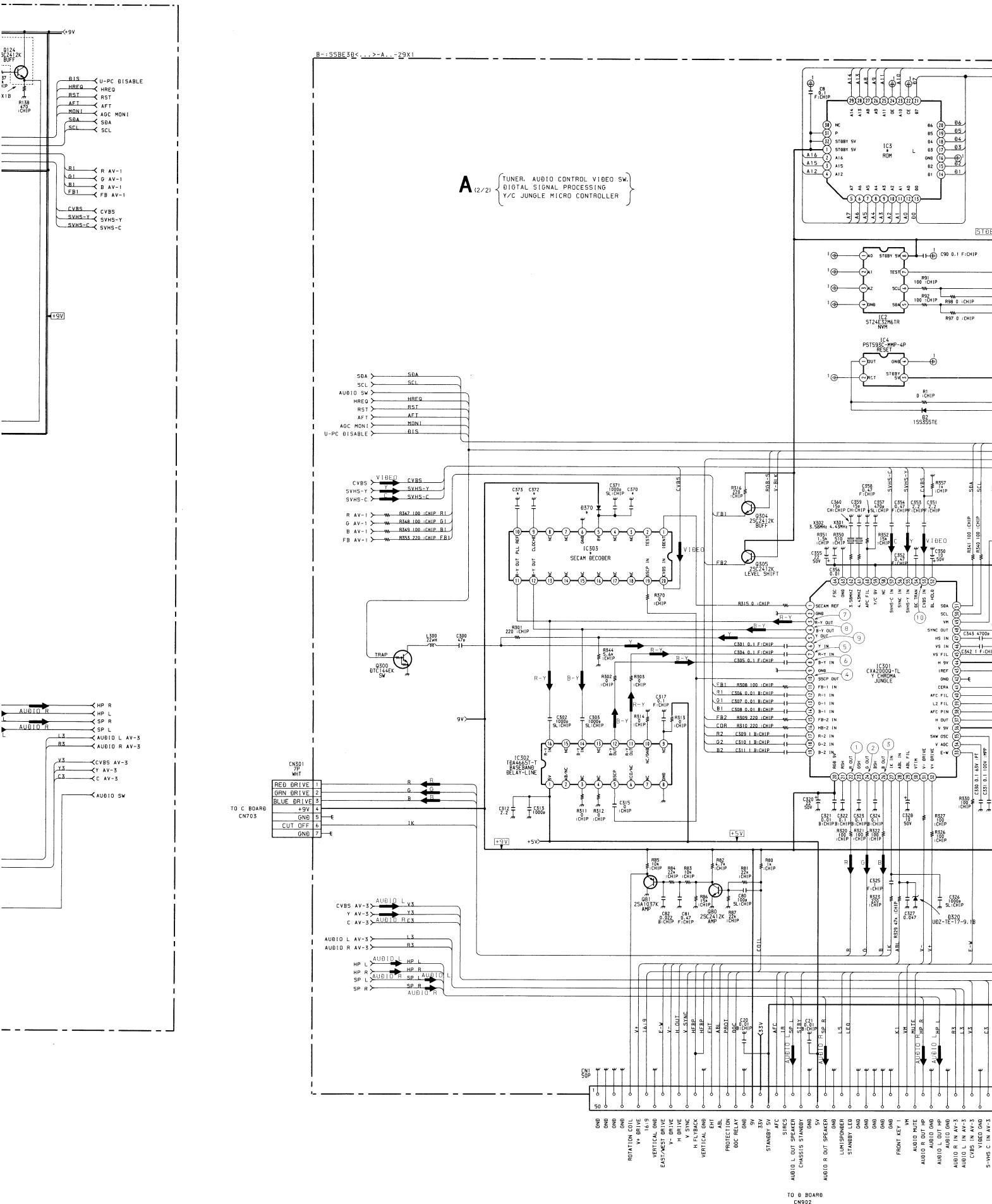
**D BOARD IC VOLTAGE TABLE**

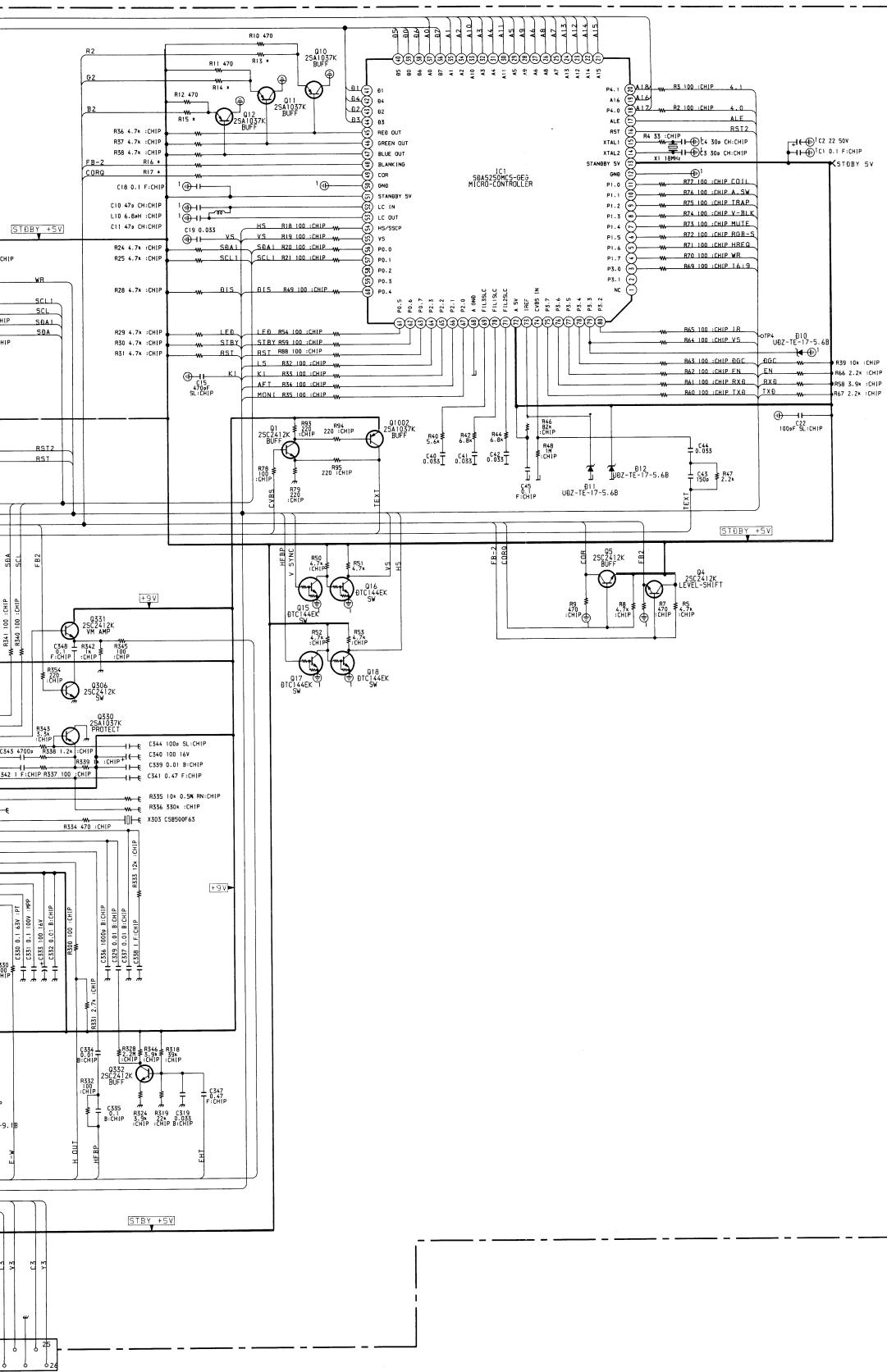
IC Voltage Table		
Ref No	Pin No	Voltage (V)
IC500	1	1.5
	2	15.0
	3	-12.3
	4	-14.0
	5	0.1
	6	15.2
	7	1.4
IC600	1	170.0
	2	-62.4
	3	-62.6
	4	-62.2
	5	-62.0
	6	-62.6
	7	-62.4
	8	-62.0
	9	-58.0
IC601	1	64.3
	2	63.0
	3	-62.5
	4	-58.6
IC602	1	135.0
	2	63.2
	3	-0.1
IC800	3	0.9
	5	1.5
	6	2.0
	7	0.2
	8	9.0
IC1200	2	21.7
	4	21.5
	5	-21.7
IC1201	1	4.0
	2	9.0
	3	4.0
	5	0.5
	8	0.5



B-:SSBE30<...>-A..-29X1

**A BOARD \* MARK**





## A (1/2) BOARD IC VOLTAGE TABLE

IC Voltage Table		
Ref No	Pin No	Voltage (V)
IC201	13	4.4
	15	4.4
	20	3.5
	21	2.7
	22	4.9
	23	4.4
	24	0
	25	4.4
	26	8.8
IC202	32	4.4
	4	2.8
	6-7	0.1
	8	3.0
	9	3.6
	11	4.7
	13	4.7
	20-21	2.4
	23	0.2
	25	1.5
	26	4.8
	28	3.8
	29	2.6
	39-42	3.8
	44	7.1
	45	8.0
	46	7.1
	47-48	3.8
	53-54	3.8

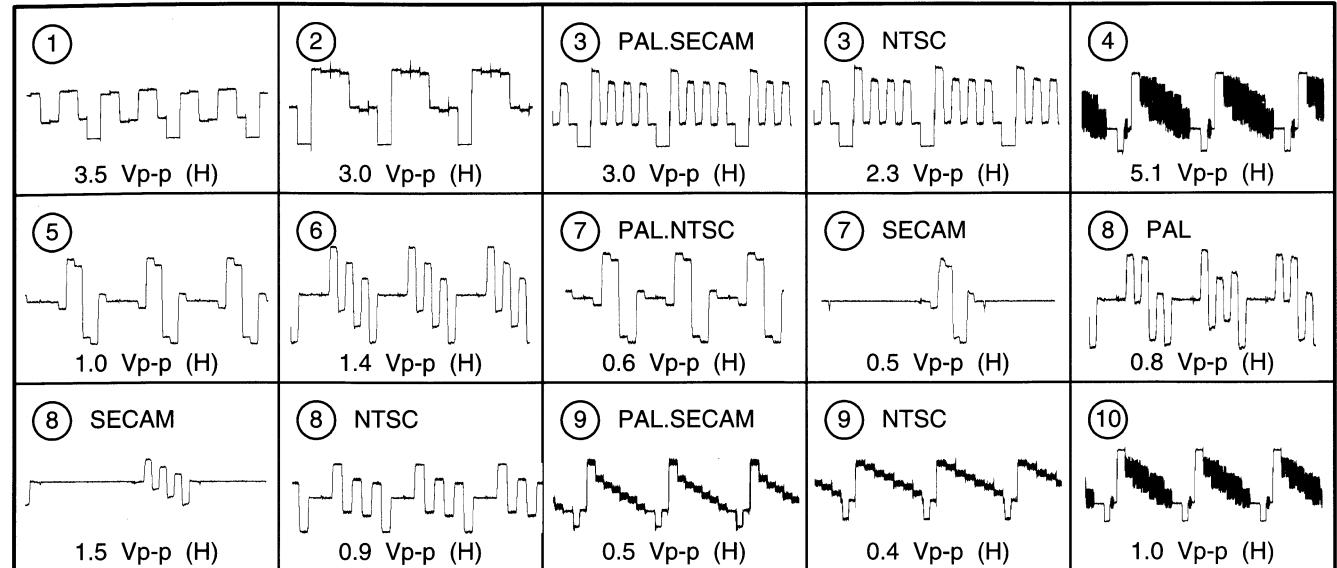
## TRANSISTOR VOLTAGE TABLE

Ref No	B Base	C Collector	E Emitter
Q1	3.7	4.8	3.1
Q4	0.1	4.8	-
Q5	0.7	4.8	4.0
Q15	-	4.3	-
Q16	4.3	0.2	-
Q17	0.4	3.5	-
Q18	3.5	0.7	-
Q80	2.6	2.2	-
Q81	2.4	-	3.0
Q304	-	4.8	-
Q305	-	4.8	-
Q330	4.5	-	5.1
Q331	6.3	8.8	5.7
Q332	3.1	8.8	2.5
Q1001	4.4	-	-

### TRANSISTOR VOLTAGE TABLE

Ref No	B Base	C Collector	E Emitter
Q110	1.8	8.2	1.2
Q112	1.5	8.8	0.8
Q113	1.8	-	-
Q114	5.4	6.0	-
Q120	84.3	8.8	3.7
Q121	1.5	5.4	0.9
Q122	5.4	8.8	4.7
Q124	-	8.8	-
Q201	4.4	8.8	3.7
Q202	4.4	8.8	3.7

## WAVEFORMS A BOARD



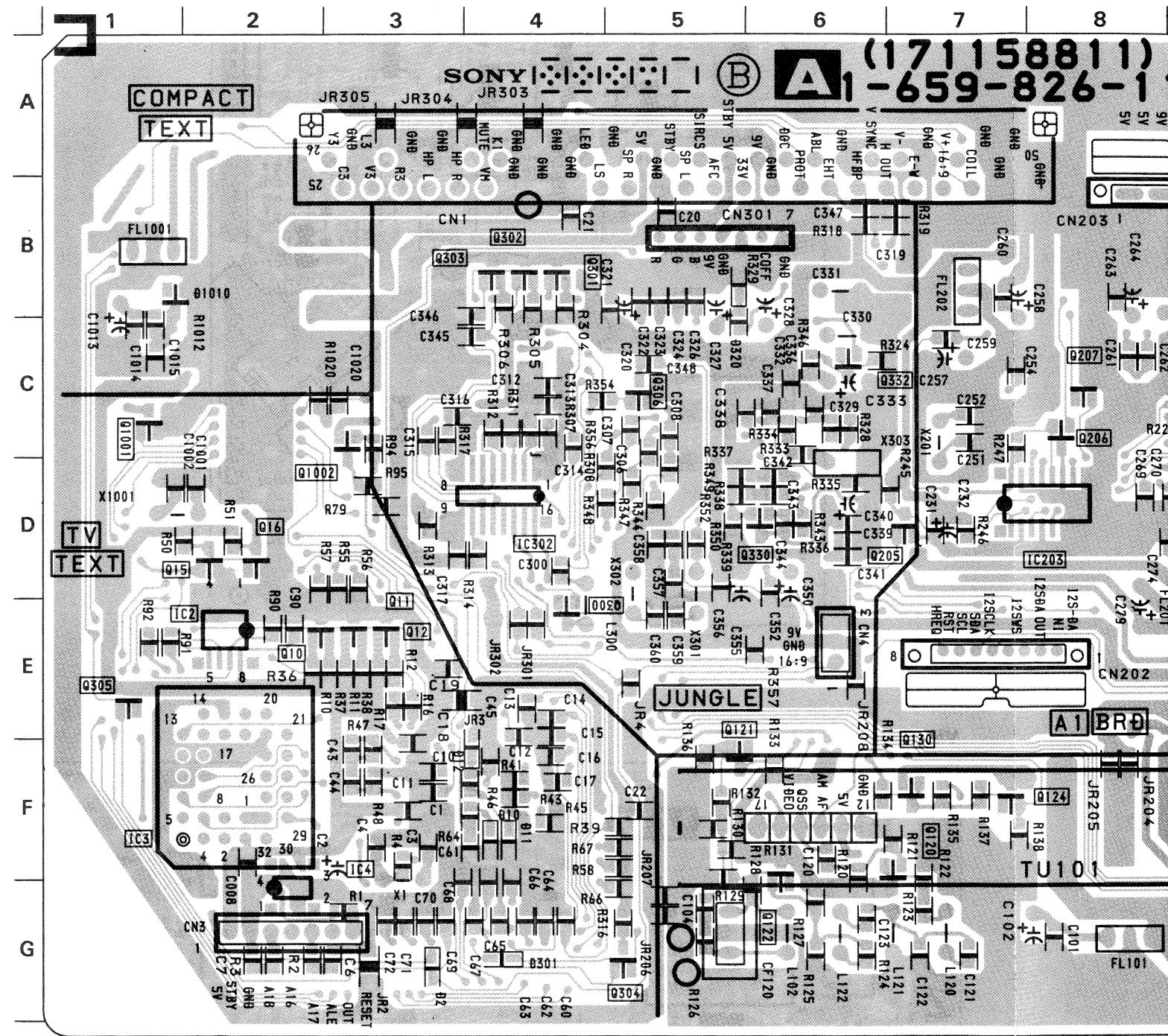
A (2/2) BOARD IC VOLTAGE TABLE

IC Voltage Table											
Ref No	Pin No	Voltage (V)	Ref No	Pin No	Voltage (V)	Ref No	Pin No	Voltage (V)			
IC1	2	3.6	IC301	5	3.6	IC302	61	5.0			
	3-4	4.8		6	5.0		1	4.8			
	5	0.5		7-8	5.4		5	0.7			
	7	4.8		10	0.6		9	4.8			
	9	4.8		12-14	5.4		11-12	3.0			
	11	2.4		16	4.0		14	1.3			
	13	4.8		17-19	5.4		16	1.3			
	14-15	2.3		20	8.8		22-23	2.2			
	16-17	4.8		24	2.0		25	2.4			
	48	4.0		26	2.0		27	4.0			
	51	4.8		28	6.6		29	8.8			
	52-53	2.4		31-33	3.0		34	4.0			
	54	0.7		35	4.6		36	8.8			
	55	0.2		37	3.1		38	3.4			
	56-57	4.8		39	5.3		40	4.2			
	58	2.8		41	2.3		43	1.7			
	59	3.5		44	8.8		45	2.5			
	60	2.4		46	3.9		47	3.0			
	62	0.7		48	4.4		49	6.3			
	63	4.4		50-51	0.1		53	3.9			
	65	4.8		54	5.0		55-56	4.2			
	66	2.1		58-59	8.8		60	5.3			
	67	2.0		61	1.3		62-63	1.4			
	69-71	2.3		64	0		66	4.6			
	72	4.8		67	4.7		68	4.0			
	73	1.5									
	74	1.2									
	75-77	4.8									
	79	0.2									
	80	4.8									
	IC2	5-8		4.8							
	IC3	1		4.8							
	31-32	4.8									
	IC4	1		4.8							
	3	4.8									
	IC301	1		1.5							
	3-4	5.6									

A

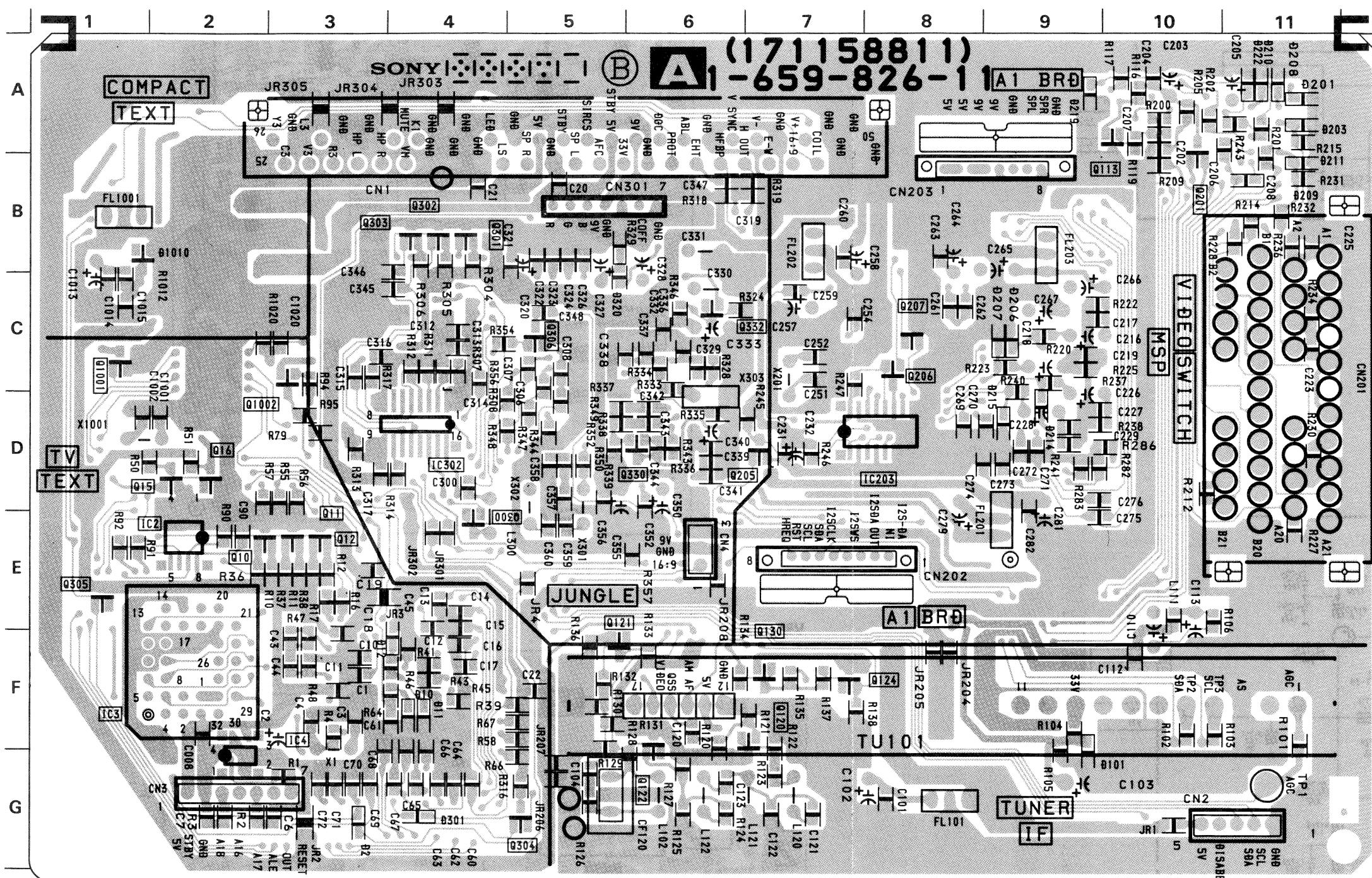
TUNER, AUDIO CONTROL VIDEO SW, DIGITAL SIGNAL PROCESSING  
Y/C JUNGLE MICRO CONTROLLER

## A Board &lt;Conductor Side&gt;

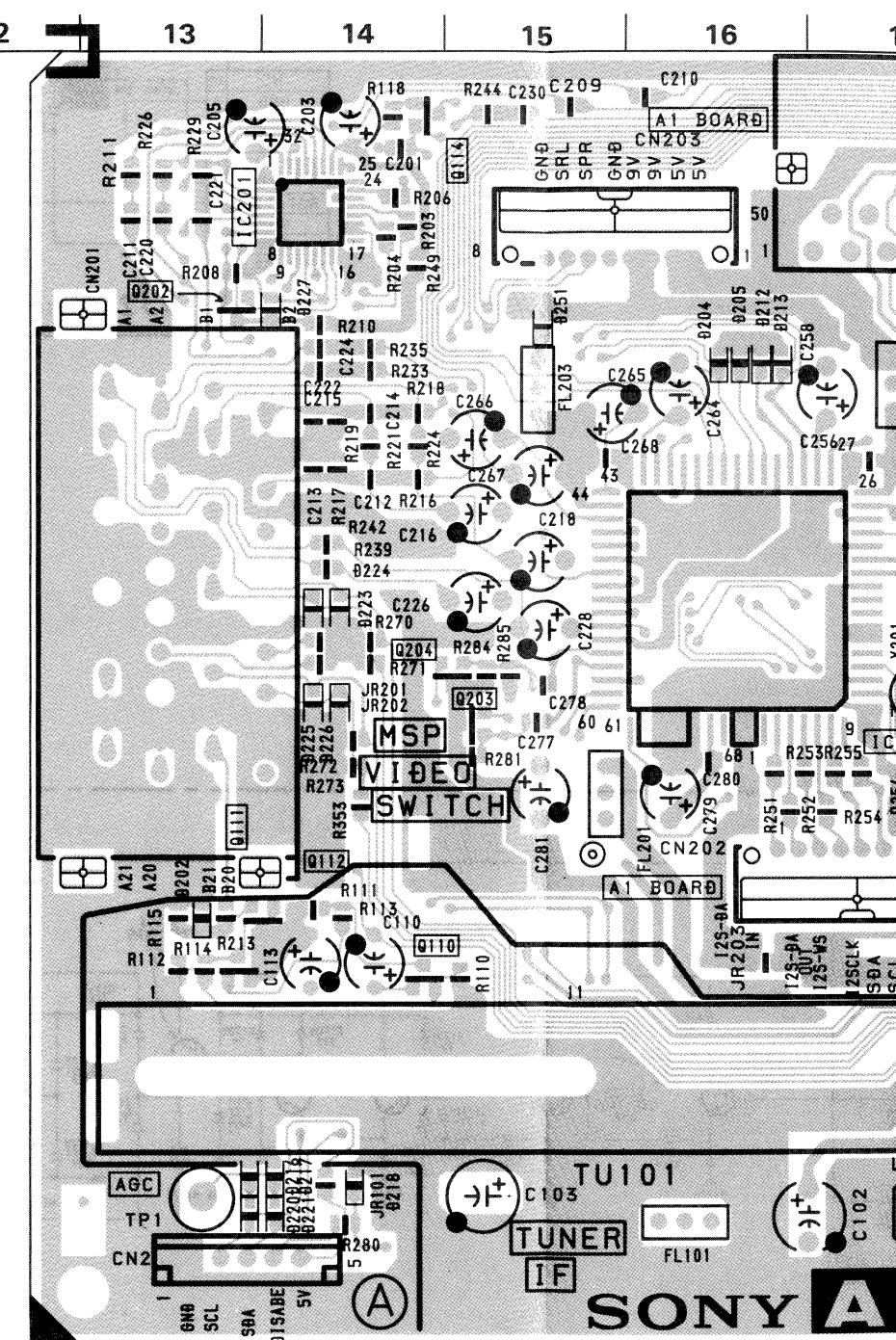


**A** [ TUNER, AUDIO CONTROL VIDEO SW, DIGITAL SIGNAL PROCESSING ]  
Y/C JUNGLE MICRO CONTROLLER

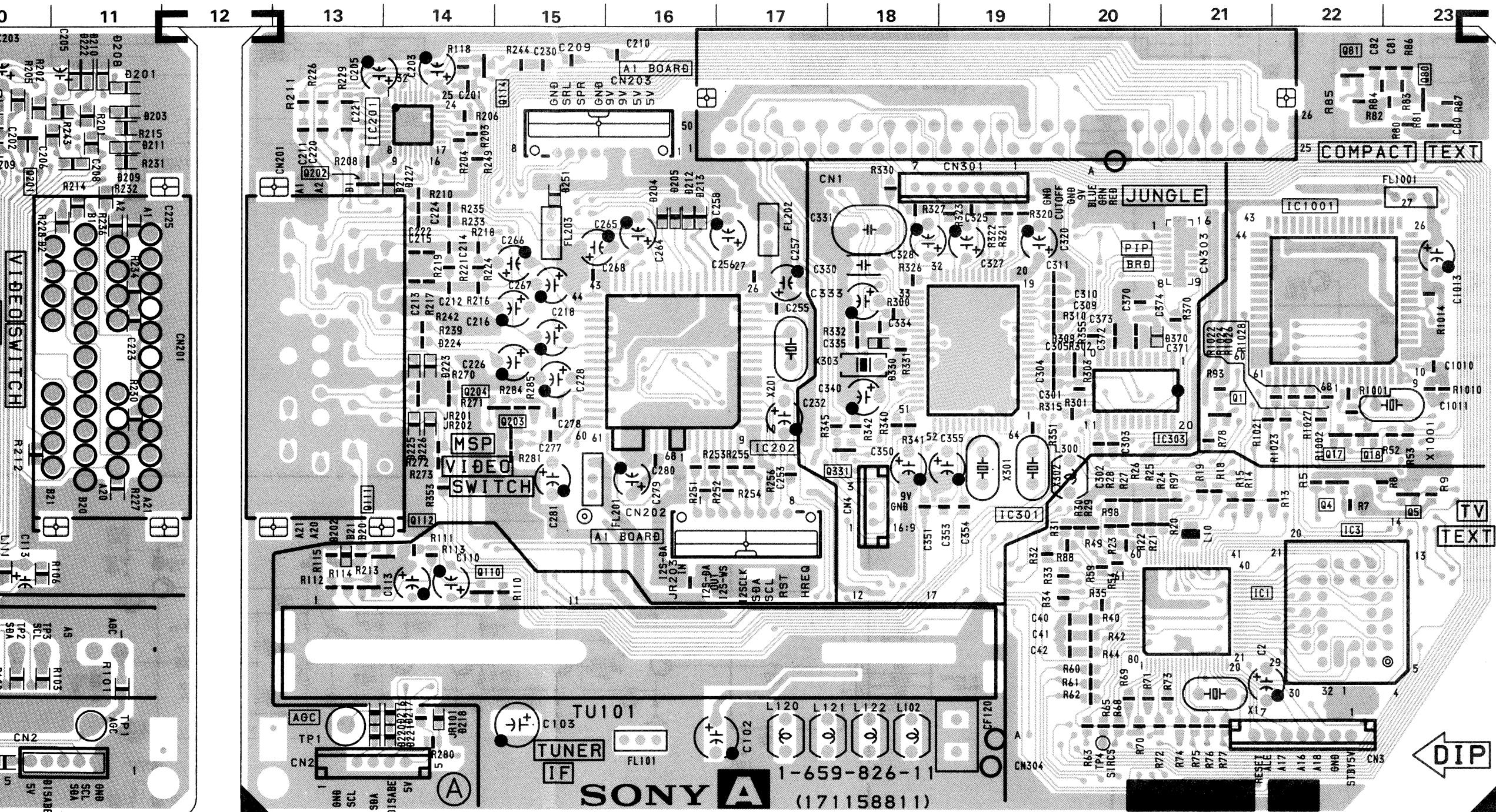
A Board &lt;Conductor Side&gt;



A Board &lt;Component Side&gt;

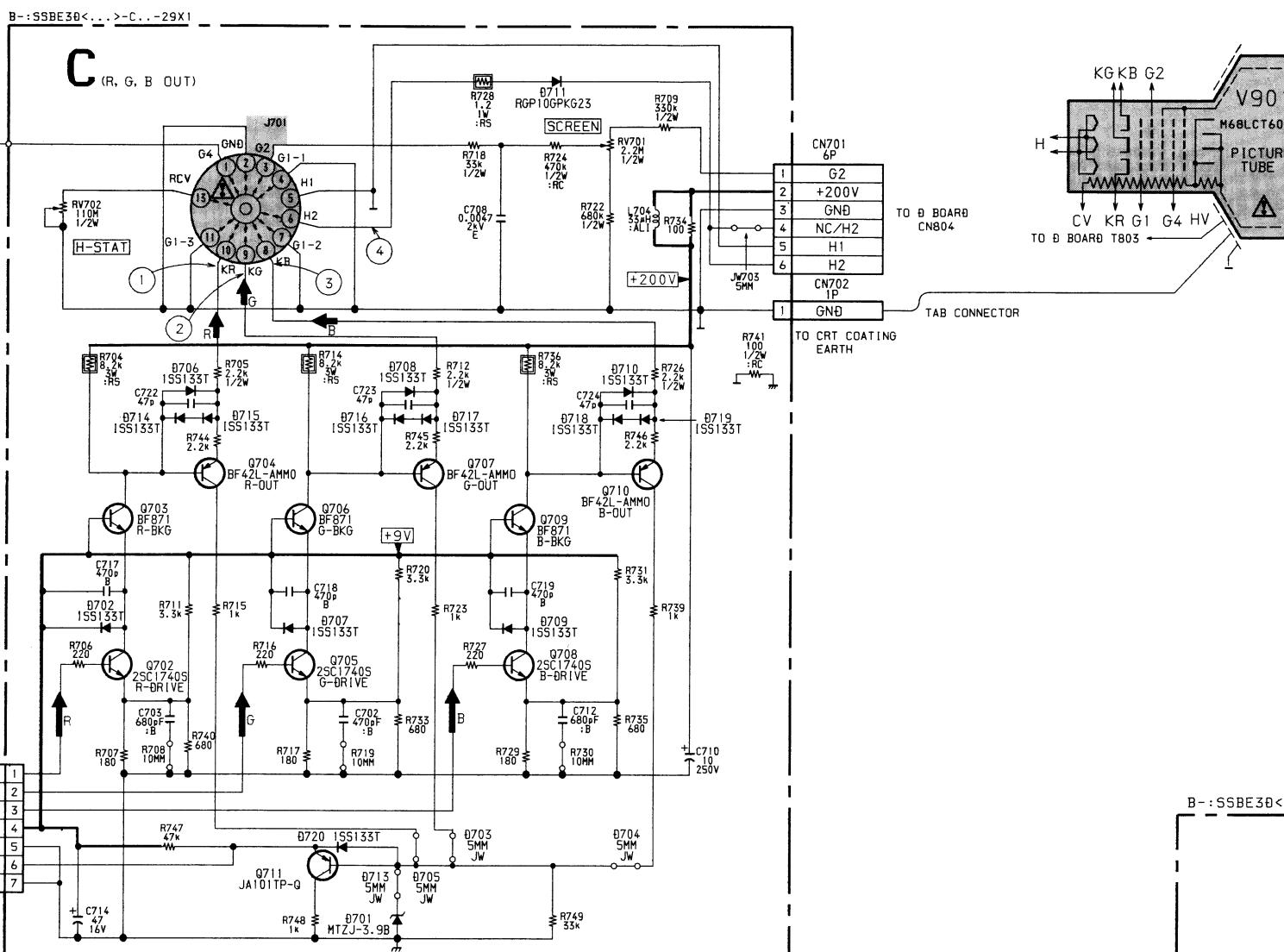


## A Board <Component Side>

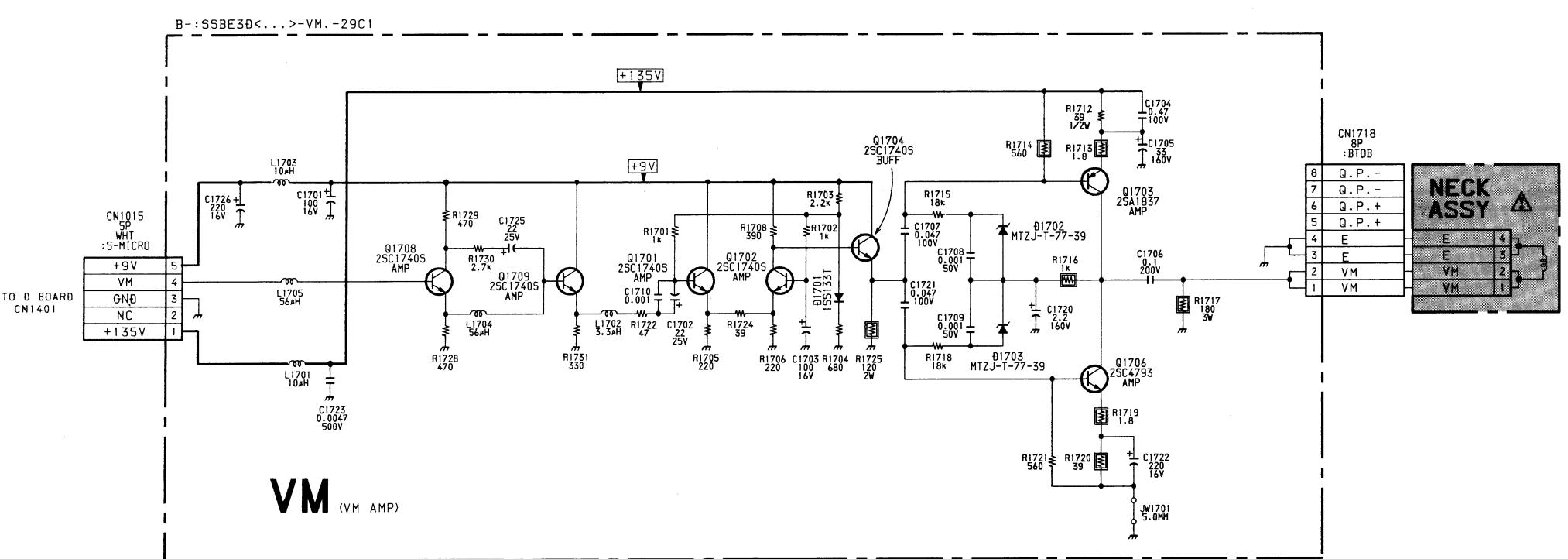
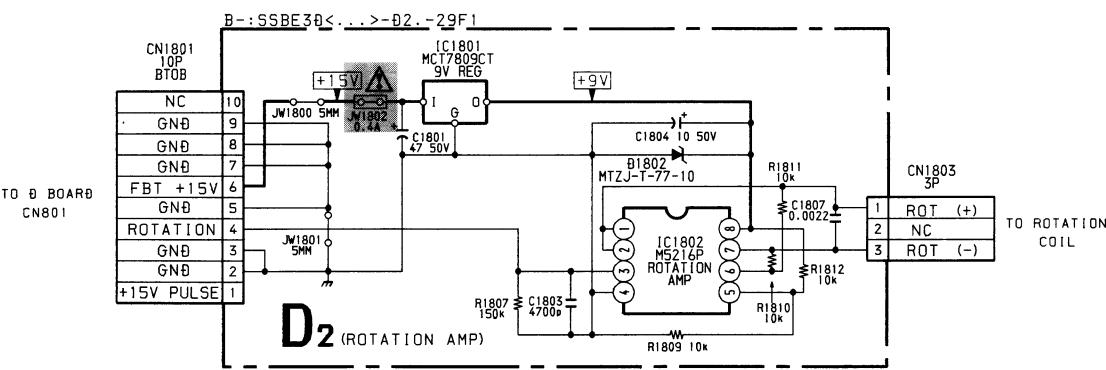
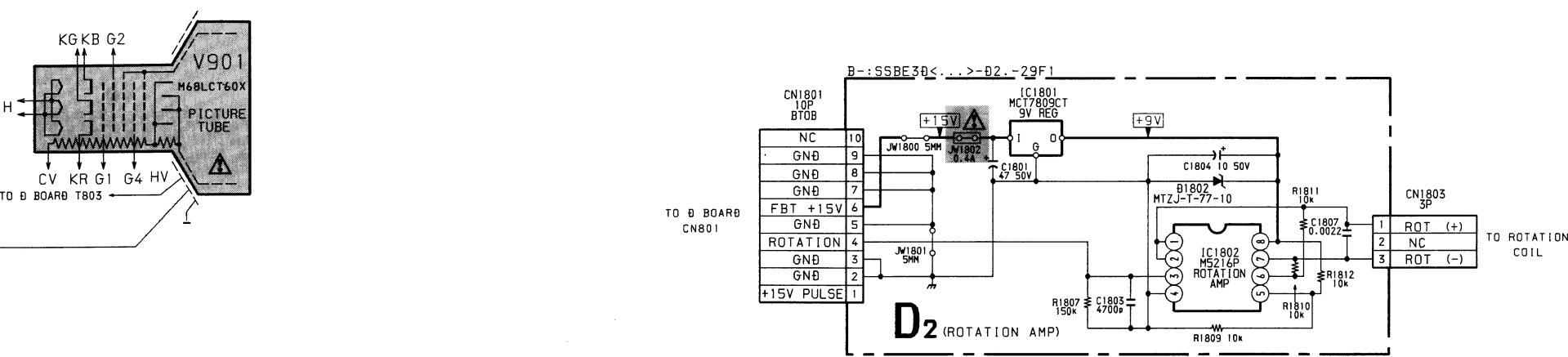
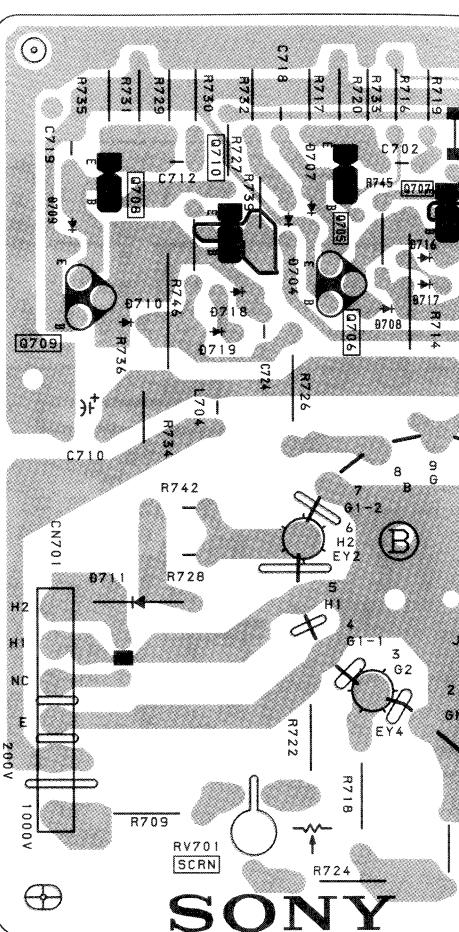


## A BOARD

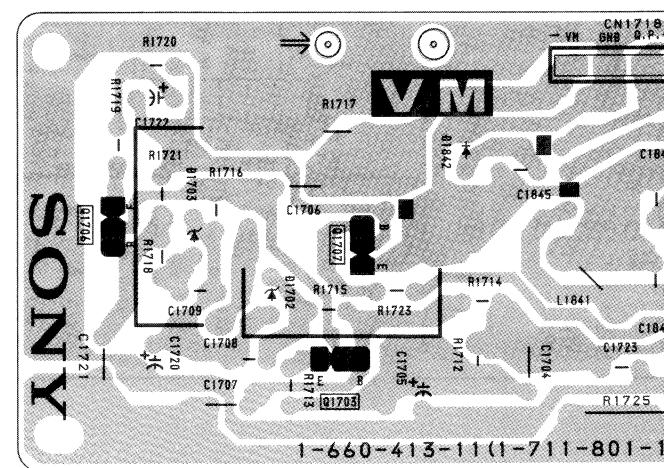
IC		Q305	E-1
IC1	F-21	Q306	C-5
IC2	E-2	Q330	D-6
IC3	F-2	Q331	D-18
IC4	G-2	Q332	C-6
IC201	A-14	Q1002	C-3
IC202	C-16	DIODE	
IC203	D-8	D2	G-3
IC301	C-19	D10	F-10
IC302	D-4	D11	F-10
IC303	D-21	D12	F-4
TRANSISTOR		D101	F-9
Q1	D-21	D201	A-11
Q4	E-22	D202	E-13
Q5	E-23	D203	A-11
Q10	E-2	D204	B-16
Q11	E-3	D205	B-16
Q15	D-2	D206	C-9
Q16	D-2	D207	C-9
Q17	D-22	D208	A-11
Q18	D-23	D209	B-11
Q80	A-23	D210	A-11
Q81	A-22	D211	B-11
Q110	F-14	D212	B-16
Q111	E-14	D213	B-16
Q112	E-14	D214	D-9
Q113	A-10	D215	D-9
Q114	A-14	D216	G-14
Q120	F-7	D217	G-14
Q121	F-5	D218	G-14
Q122	F-6	D220	G-14
Q124	F-7	D221	D-14
Q130	F-7	D222	D-14
Q201	B-10	D223	D-14
Q202	B-13	D224	D-14
Q203	D-15	D225	D-14
Q204	D-15	D226	D-14
Q205	D-7	D227	B14
Q206	C-8	D251	B-15
Q207	C-8	D320	C-5
Q300	E-4	D370	C-21
Q304	G-5		



C Board



VM Board



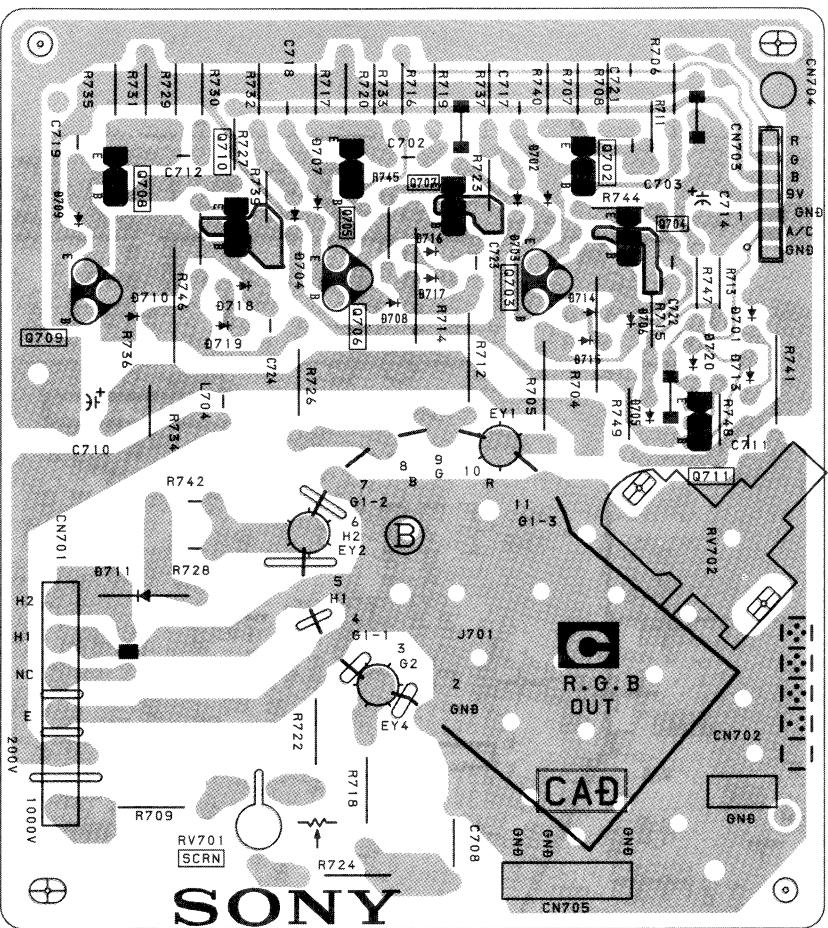
C

〔 R. G. B OUT 〕

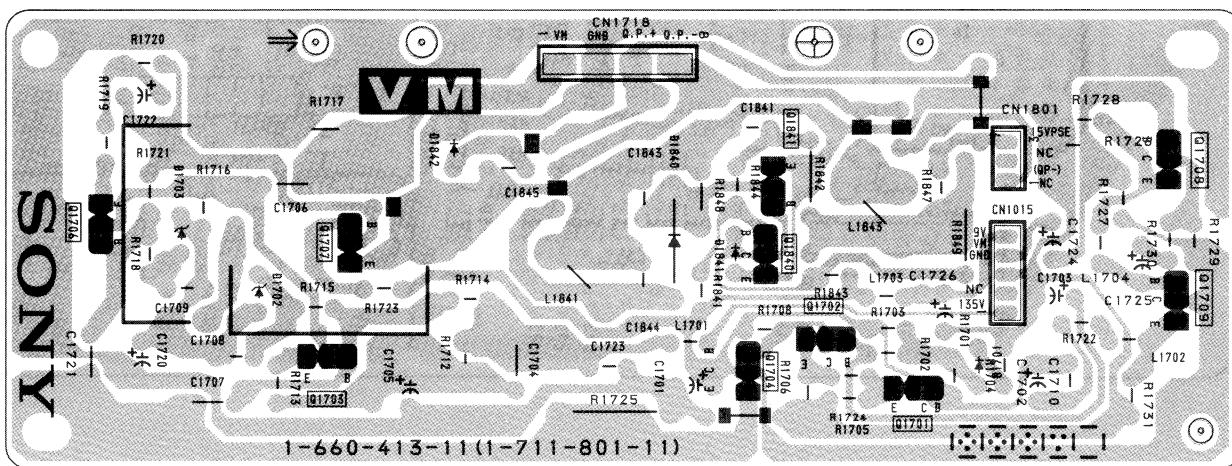
VM

〔 VM AMP 〕

## C Board



## VM Board

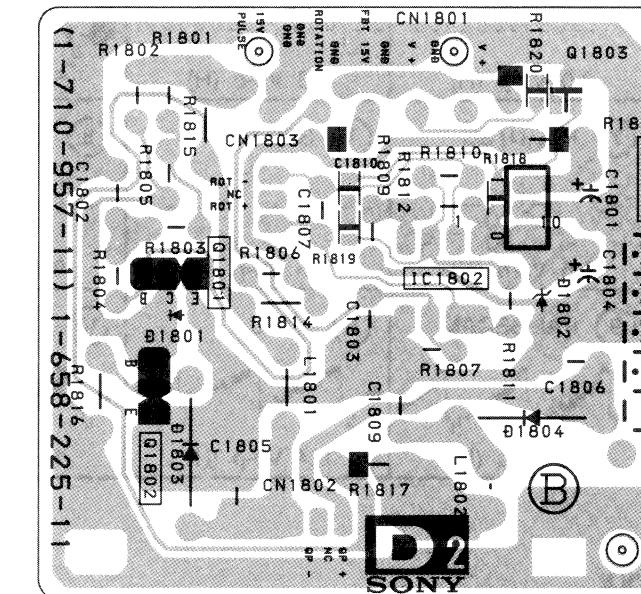


— 61 —

D2

## ROTATION AMP

D2 Board



## C BOARD TRANSISTOR VOLTAGE TABLE

Transistor Voltage Table			
Ref No	B Base	C Collector	E Emitter
Q702	2.0	11.4	1.4
Q703	12.0	168.3	11.4
Q704	168.3	6.0	163.5
Q705	1.7	11.4	1.2
Q706	12.0	178.8	11.4
Q707	178.2	6.2	173.8
Q708	2.0	11.4	1.4
Q709	12.0	168.3	11.4
Q710	168.0	6.4	160.0

## VM BOARD TRANSISTOR VOLTAGE TABLE

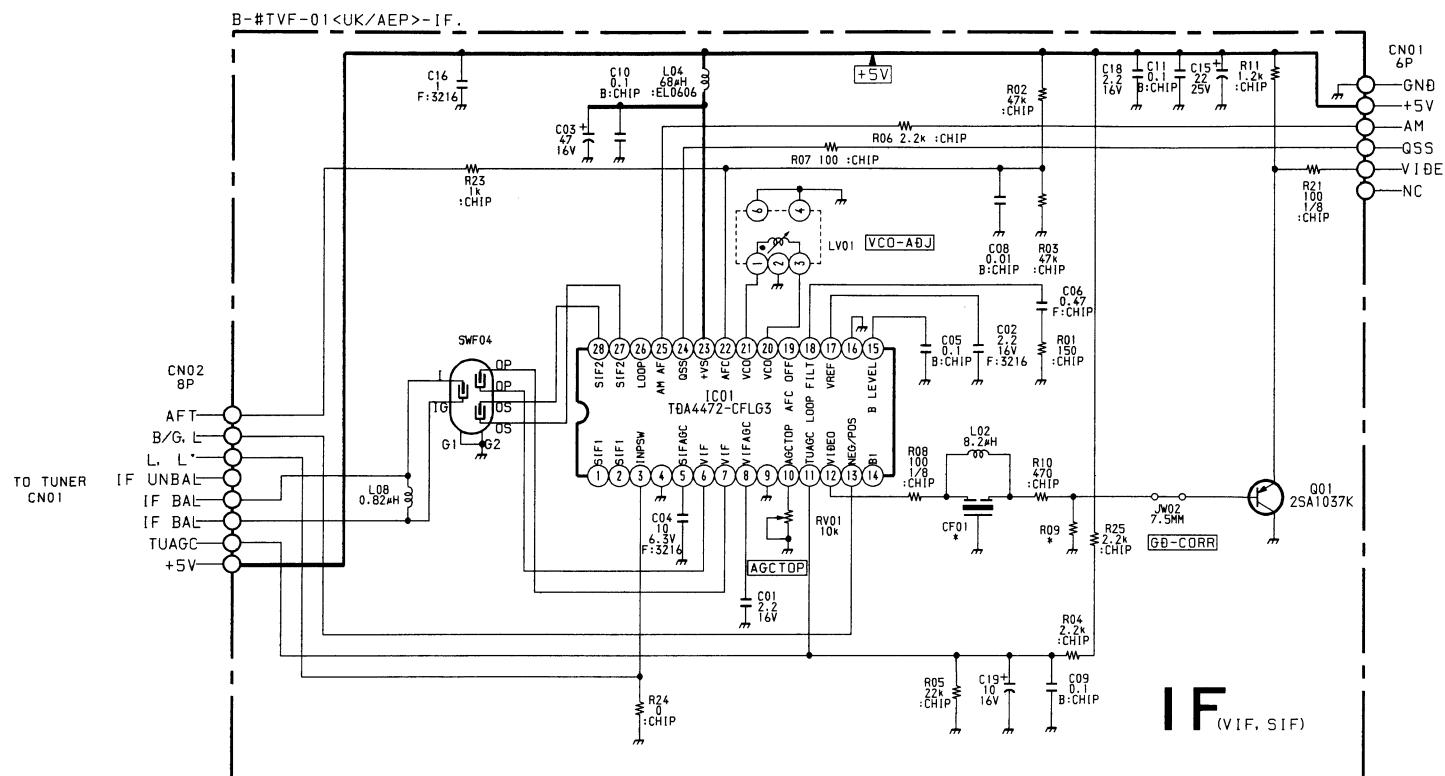
Transistor Voltage Table			
Ref No	B Base	C Collector	E Emitter
Q1701	2.5	8.8	1.8
Q1702	2.5	5.5	1.8
Q1703	134.3	71.8	134.8
Q1704	5.5	8.8	4.8
Q1706	1.0	71.8	0.4
Q1707	0.7	-	-
Q1708	2.9	6.6	2.2
Q1709	2.2	8.8	1.5
Q1840	0.6	-	-

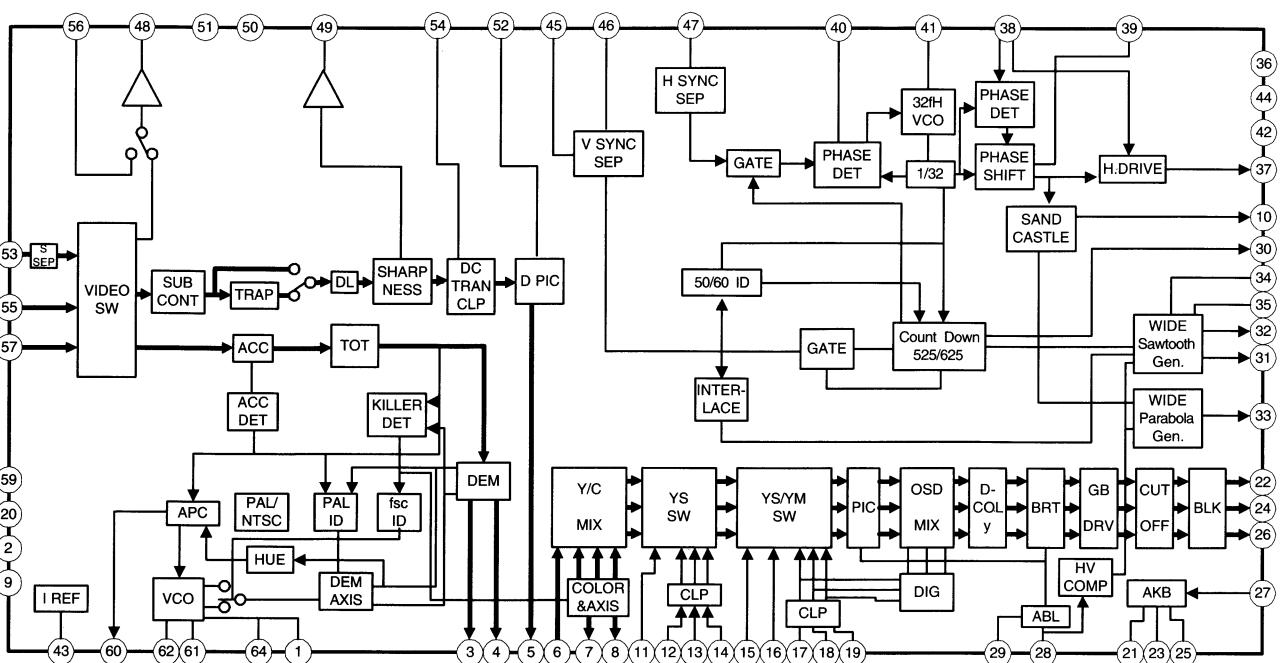
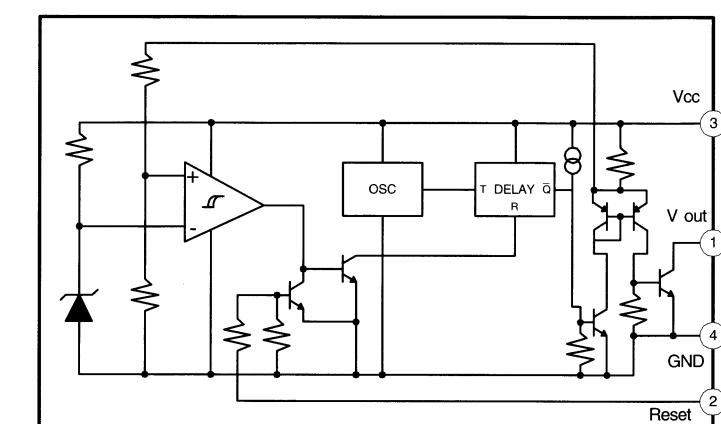
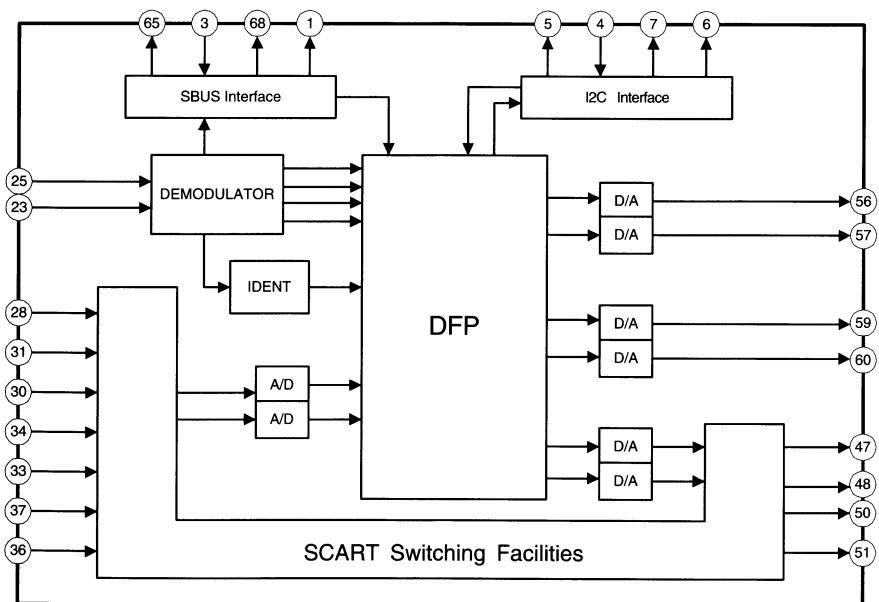
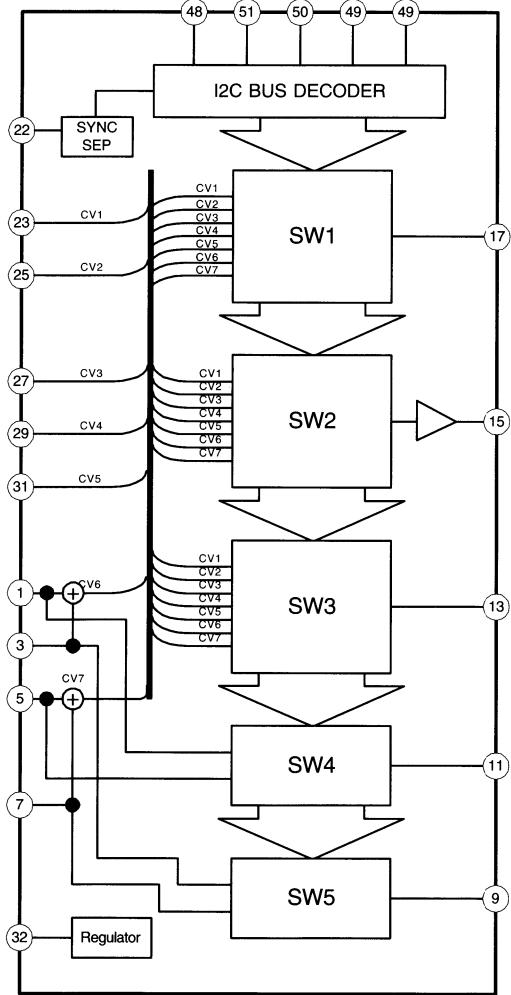
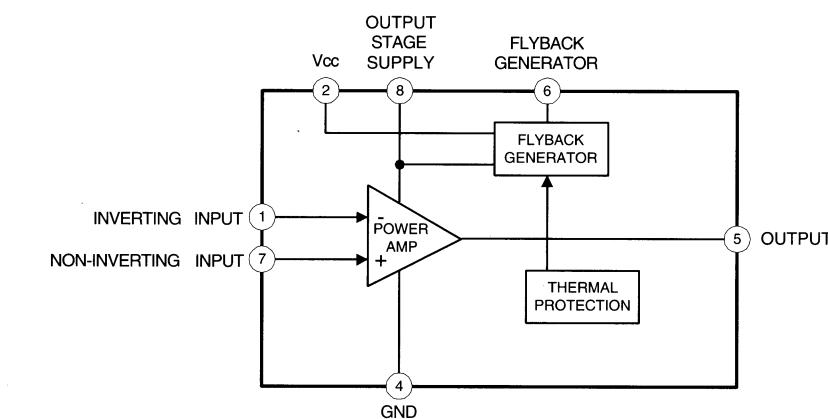
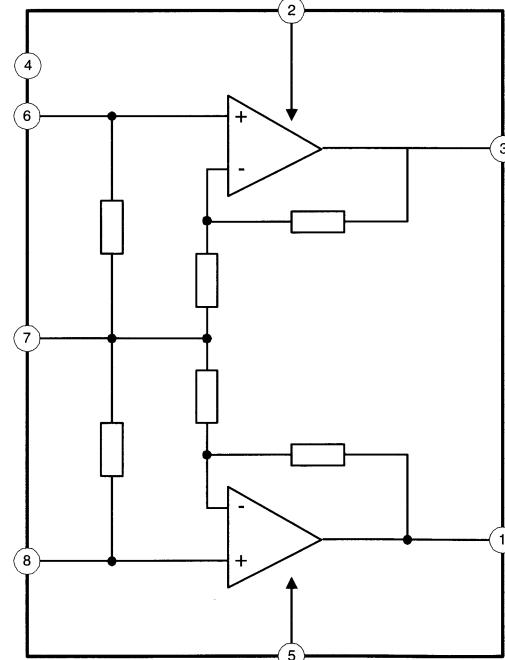
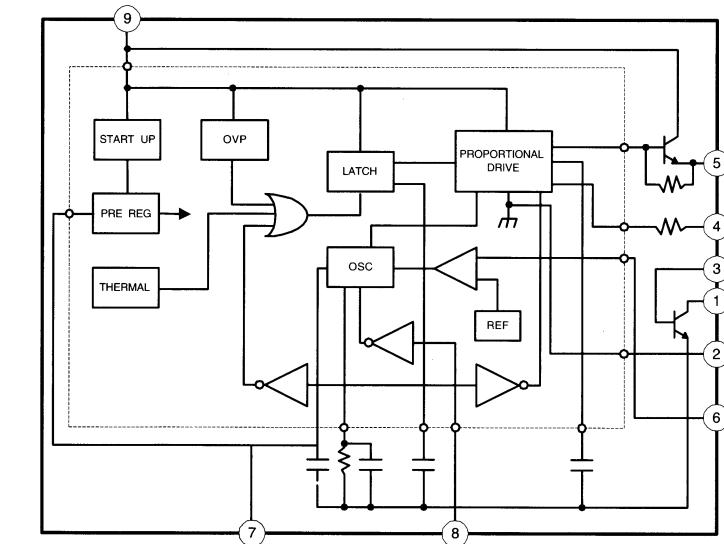
## D2 BOARD IC VOLTAGE TABLE

IC Voltage Table		
Ref No	Pin No	Voltage (V)
IC1802	1-2	2.8
	3	3.0
	5-6	4.4
	7	6.2
	8	9.0

## TUVIF (AEP) (KV-29X1A, 29X1D, 29X1E, 29X1K, 29X1L and 29X1R ONLY)

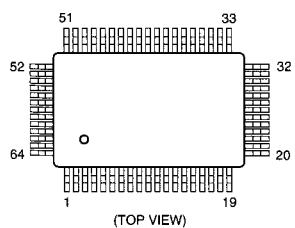
## TUVIF (UK) (KV-29X1U ONLY)



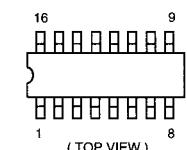
**A BOARD IC301 CXA2000Q-TL****A BOARD IC4 PST593C****A BOARD IC202 MSP3410/MSP3400****A BOARD IC201 CXA2040Q****D BOARD IC500 STV9379****D BOARD IC1200 TDA7264****D BOARD IC600 STR-S6708**

## 5-4. SEMICONDUCTORS

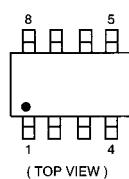
CXA2000Q-TL



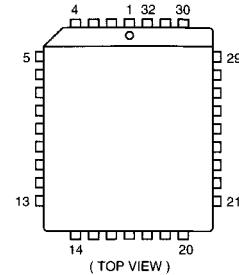
MC14052BDR2



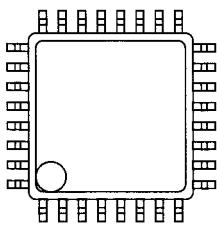
ST24E32M6TR



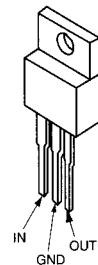
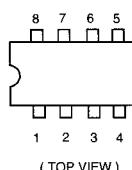
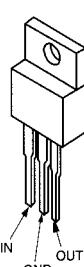
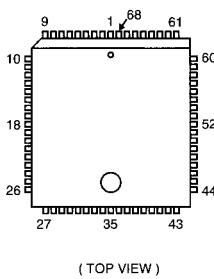
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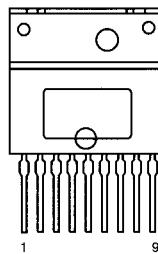
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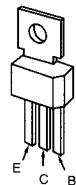
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LM2940CT  
LM2940T-9.0  
MCT7809CT  
μPC2405HFMSP3400C-PS  
MSP3410-15

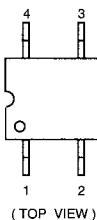
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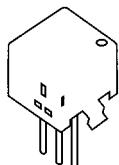
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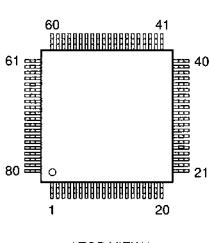
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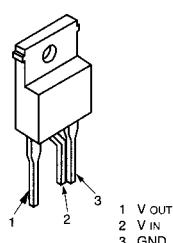
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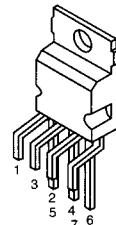
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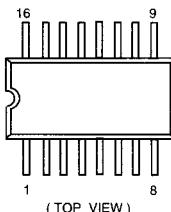
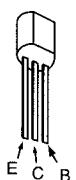
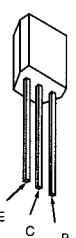
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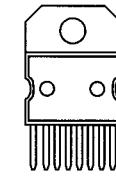
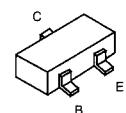
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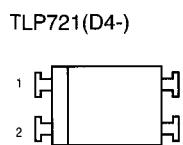


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2SA933AS  
2SA933S  
2SA1091-O  
2SC3502-F  
2SC2808STP-RDTA144ES  
DTC114ES  
DTC143TS  
DTC144ES  
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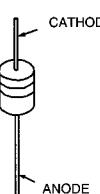
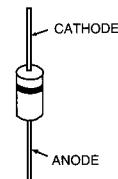
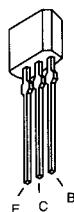
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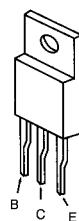


AU-01Z-V1	GP08D	MTZJ-3.6A	RD3.9ESB2
EG-1Z-V1	RGP02	MTZJ-3.9B	RD5.1ESB2
EGP20G	RGP10GPKG23	MTZJ-5.1B	RD5.6ESB2
EL1Z	RGP15GPKG23	MTZJ-5.6B	RD6.2ESB2
EM1-V1	RU3YX	MTZJ-6.2B	RD6.8ESB2
EU-1-V1	RU4AM-T3	MTZJ-6.8B	RD7.5ESB2
EU2-V1	RU4DS	MTZJ-7.5C	RD10ESB2
FML-G12S		MTZJ-9.1	RD39ES-B2
		MTZJ-T-77-9.1A	
		MTZJ-10	1SS133T-77
		MTZJ-39	

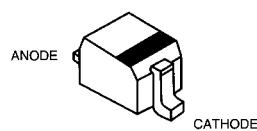
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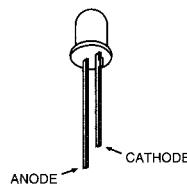
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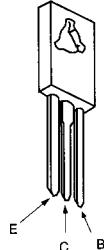
BAS216 MA8330  
DTZ6.8C 1SS355  
DTZ9.1 UDZ-TE-17-5.6B  
DTZ33B UDZ-TE-17-9.1B



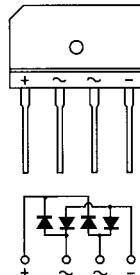
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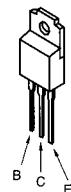
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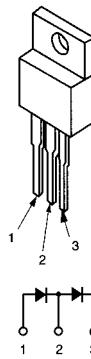
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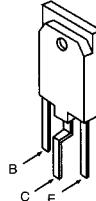
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FMS-3FU



2SC4927-01



## SECTION 6

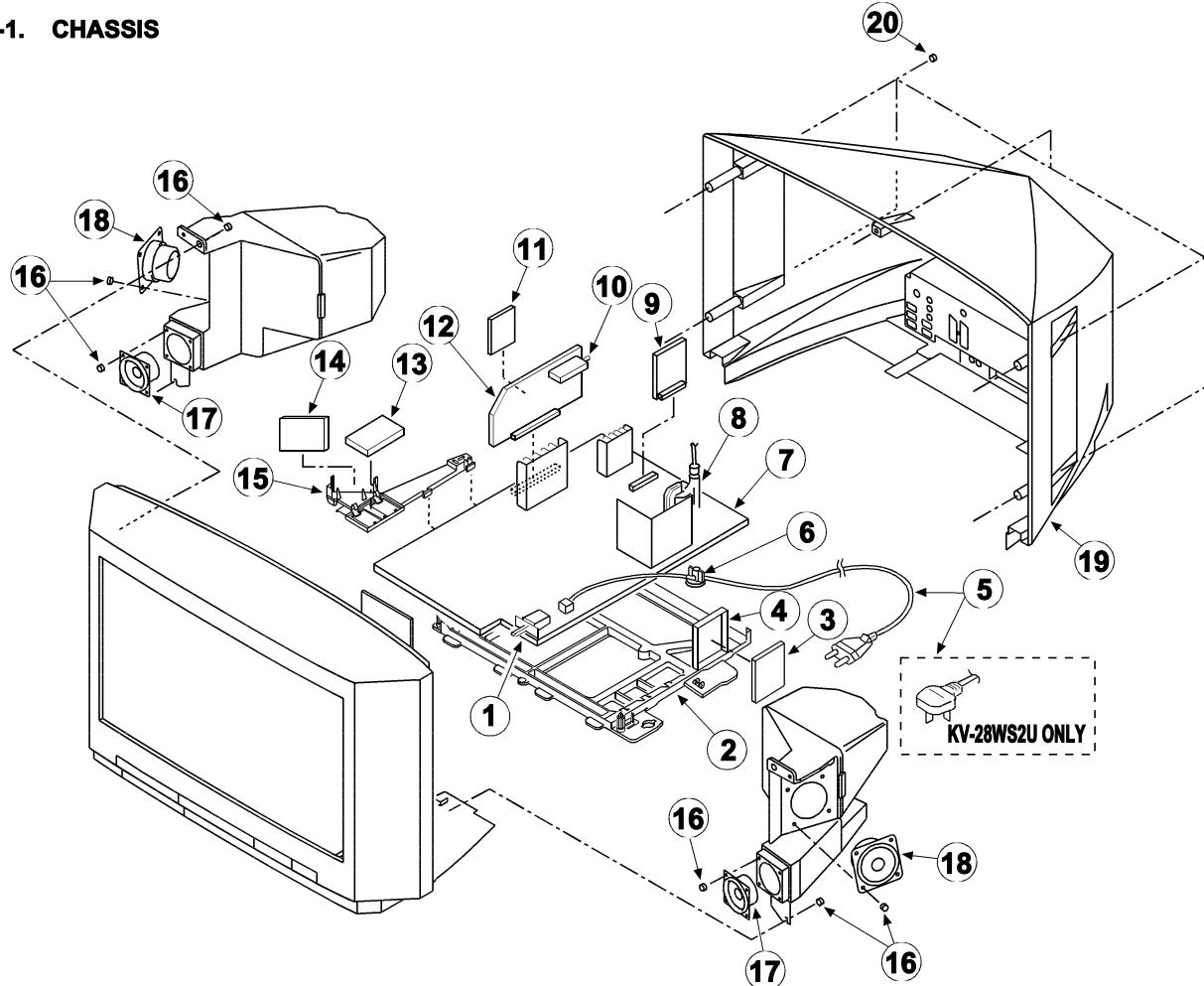
### EXPLODED VIEWS

**NOTE :**

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remarks column.
- Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

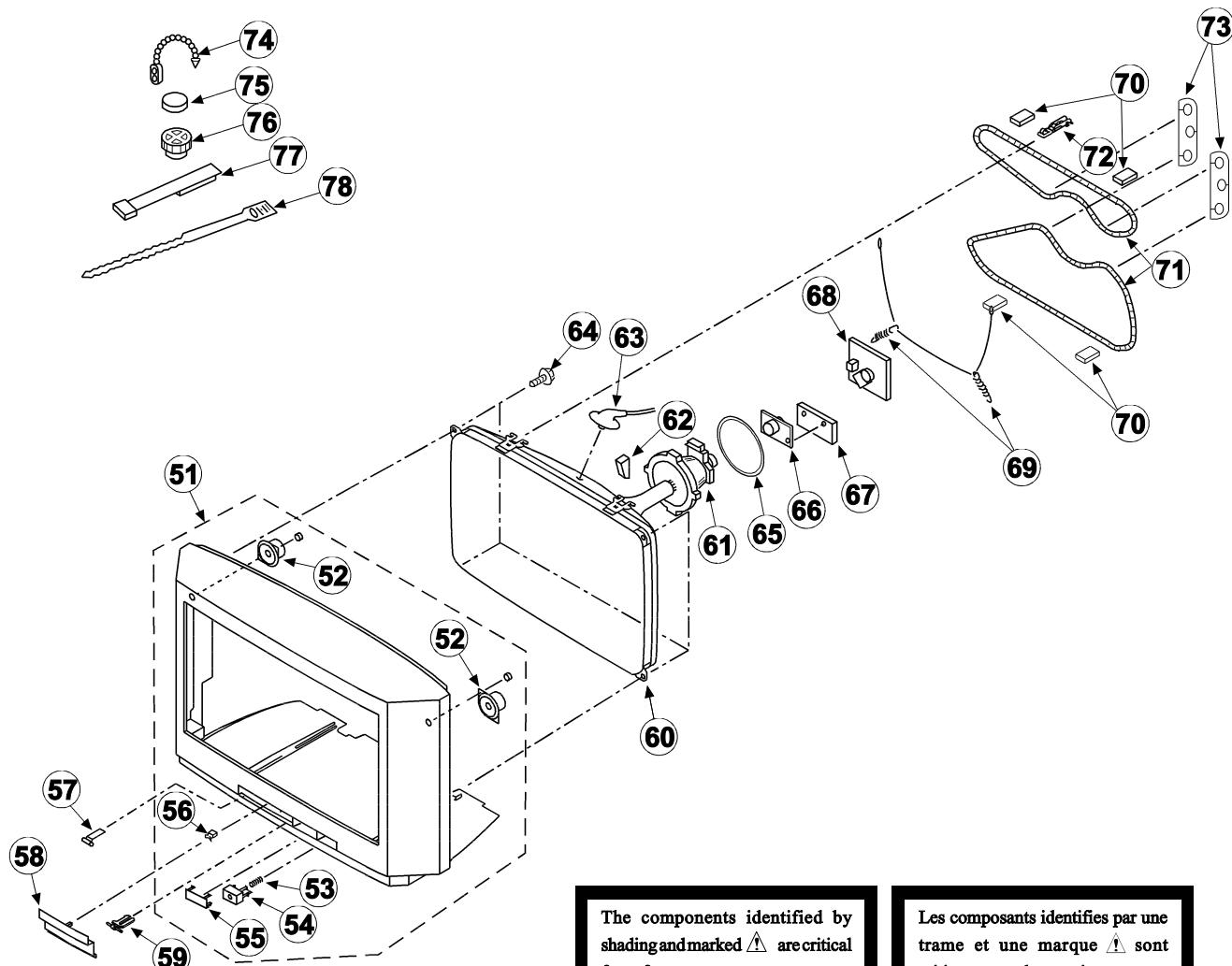
The components identified by shading and marked **⚠** are critical for safety.  
Replace only with the part number specified.

Les composants identifiés par une trame et une marque **⚠** sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

**6-1. CHASSIS**

REF NO	PART NO	DESCRIPTION	REMARK	REF NO	PART NO	DESCRIPTION	REMARK
1	⚠ 1-571-433-21	SWITCH, PUSH (AC POWER)		11	*A-1630-529-A	A1 BOARD, COMPLETE	
2	*4-203-315-01	BRACKET, MAIN		12	*A-1632-516-A	A BOARD, COMPLETE (KV-28WS2B)	
3	*A-1640-235-A	D3 BOARD, COMPLETE		13	*A-1632-471-A	A BOARD, COMPLETE (KV-28WS2D)	
4	*4-203-404-01	BRACKET, D3		14	*A-1632-517-A	A BOARD, COMPLETE (KV-28WS2E)	
5	⚠ 1-751-680-11	CORD, POWER (WITH NOISE FILTER) 2.5A/250V (KV-28WS2B/28WS2D/28WS2E)		15	*A-1632-529-A	A BOARD, COMPLETE (KV-28WS2K)	
	⚠ 1-690-270-21	CORD, POWER (WITH CONNECTOR) 2.5A/250V (KV-28WS2K/28WS2R)		16	*A-1632-530-A	A BOARD, COMPLETE (KV-28WS2R)	
	⚠ 1-776-204-11	CORD, POWER (FILTER) 3.0A/250V (KV-28WS2U)		17	*A-1632-515-A	A BOARD, COMPLETE (KV-28WS2U)	
6	*4-202-531-01	AC CORD LOCK (SC)		18	*A-1651-088-A	J BOARD, COMPLETE	
7	*A-1642-190-A	D BOARD, COMPLETE		19	*A-1649-018-A	K1 BOARD, COMPLETE	
8	⚠ 1-453-169-11	TRANSFORMER ASSY, FLYBACK (UX-1604A2)		20	*4-203-537-01	BRACKET, J-K-T	
9	*A-1640-214-A	D2 BOARD, COMPLETE		16	4-039-355-11	SCREW(4X12), (+) BV TAPPING	
10	1-693-340-11	TUNER/VIF (FR) (KV-28WS2B)		17	1-505-154-11	SPEAKER (6.5CM)	
	1-693-338-11	TUNER/VIF (AEP) (KV-28WS2D/28WS2E/28WS2K/28WS2R)		18	1-505-155-11	SPEAKER (10CM)	
	1-693-339-11	TUNER/VIF (UK) (KV-28WS2U)		19	4-203-543-01	COVER, REAR	
				20	4-039-358-01	SCREW (4X16), (+) BV TAPPING	

## 6-2. PICTURE TUBE



REF NO	PART NO	DESCRIPTION	REMARK	REF NO	PART NO	DESCRIPTION	REMARK
51	A-1603-045-A	BEZNET ASSY	52-56	67	*A-1644-070-A	VM BOARD, COMPLETE	
52	1-504-418-21	SPEAKER (5CM)		68	*A-1638-079-A	C BOARD, COMPLETE	
53	4-202-964-01	SPRING		69	4-369-318-31	SPRING, TENSION	
54	4-203-540-01	BUTTON, POWER		70	*4-203-390-01	CUSHION, DGC	
55	4-203-539-01	WINDOW ORNAMENTAL		71	$\triangle$ 1-411-893-11	COIL DEGAUSSING	
56	4-047-464-01	CATCHER PUSH		72	4-202-463-01	CLIP, DGC (25°)	
57	4-045-250-01	DAMPER		73	*4-050-252-01	SPACER, DGC	
58	4-203-542-01	DOOR, CONTROL		74	4-308-870-00	CLIP, LEAD WIRE	
59	4-202-555-01	SHAFT, DOOR		75	1-452-032-00	MAGNET, DISK; 10MM Ø	
60	$\triangle$ 8-737-763-05	PICTURE TUBE (SD-284T) (W66LGY011X)		76	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM Ø	
61	$\triangle$ 8-451-434-21	DEFLECTION YOKE (Y28GIA-B)		77	X-4387-214-1	PERMALLOY ASSY, CORRECTION	
62	3-704-495-01	SPACER, DY		78	3-701-007-00	BAND, BINDING	
63	$\triangle$ 1-540-006-22	CAP ASSY, HIGH-VOLTAGE					
64	4-036-188-01	SCREW (M), PT					
65	1-452-724-22	COIL, NA ROTATION (RT-165)					
66	$\triangle$ 8-453-005-61	NECK ASSY PICTURE TUBE (NA297-M6)					

# **SECTION 7**

## **ELECTRICAL PARTS LIST**

The components identified by shading and marked  are critical for safety.  
Replace only with the part number specified.

Les composants identifies par une trame et une marque  sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

- Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors

- All variable and adjustable resistors

When indicating parts by reference number, please include the board name.

## RESISTORS

- All resistors are in ohms
- F : nonflammable

A1

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK	
	*A-1630-529-A	A1 BOARD, COMPLETE	*****			< DIODE >		
		< CAPACITOR >		D1201	8-719-988-62	DIODE 188355		
C1201	1-164-695-11	CERAMIC CHIP 0.0022MF	5%	50V	IC1201	8-759-377-62	IC DSP56004-FJ66R2	
C1202	1-163-038-00	CERAMIC CHIP 0.1MF		25V	IC1202	8-759-349-93	IC KM62256CLG-7	
C1203	1-163-038-00	CERAMIC CHIP 0.1MF		25V	IC1203	8-759-384-64	IC TDA1387T/NL/T3	
C1204	1-163-038-00	CERAMIC CHIP 0.1MF		25V	IC1204	8-759-384-64	IC TDA1387T/NL/T3	
C1205	1-163-038-00	CERAMIC CHIP 0.1MF		25V	IC1205	8-759-387-76	IC TL072CDR	
C1206	1-163-038-00	CERAMIC CHIP 0.1MF		25V	IC1206	8-759-387-76	IC TL072CDR	
C1207	1-163-038-00	CERAMIC CHIP 0.1MF		25V	IC1207	8-759-991-41	IC L78L05ACZ	
C1208	1-163-038-00	CERAMIC CHIP 0.1MF		25V		< COIL >		
C1209	1-163-038-00	CERAMIC CHIP 0.1MF		25V	L1204	1-410-989-11	INDUCTOR CHIP 0.47UH	
C1210	1-163-038-00	CERAMIC CHIP 0.1MF		25V	L1205	1-410-989-11	INDUCTOR CHIP 0.47UH	
C1211	1-163-038-00	CERAMIC CHIP 0.1MF		25V	L1206	1-410-989-11	INDUCTOR CHIP 0.47UH	
C1212	1-126-933-11	ELECT 10MF	20%	16V	L1207	1-410-989-11	INDUCTOR CHIP 0.47UH	
C1213	1-126-967-11	ELECT 47MF	20%	16V	L1208	1-410-989-11	INDUCTOR CHIP 0.47UH	
C1214	1-163-038-00	CERAMIC CHIP 0.1MF		25V	L1209	1-410-989-11	INDUCTOR CHIP 0.47UH	
C1215	1-163-038-00	CERAMIC CHIP 0.1MF		25V	L1210	1-410-989-11	INDUCTOR CHIP 0.47UH	
C1216	1-163-038-00	CERAMIC CHIP 0.1MF		25V	L1211	1-410-989-11	INDUCTOR CHIP 0.47UH	
C1217	1-163-038-00	CERAMIC CHIP 0.1MF		25V	L1212	1-410-989-11	INDUCTOR CHIP 0.47UH	
C1218	1-126-964-11	ELECT 10MF	20%	50V	L1213	1-410-989-11	INDUCTOR CHIP 0.47UH	
C1219	1-126-967-11	ELECT 47MF	20%	16V	L1220	1-410-989-11	INDUCTOR CHIP 0.47UH	
C1220	1-163-145-00	CERAMIC CHIP 0.0015MF	5%	50V	L1221	1-410-989-11	INDUCTOR CHIP 0.47UH	
C1221	1-163-145-00	CERAMIC CHIP 0.0015MF	5%	50V		< TRANSISTOR >		
C1222	1-163-038-00	CERAMIC CHIP 0.1MF		25V	Q1201	8-729-902-99	TRANSISTOR DTC114TK	
C1223	1-126-967-11	ELECT 47MF	20%	16V		< RESISTOR >		
C1224	1-126-967-11	ELECT 47MF	20%	16V	R1202	1-216-025-00	METAL GLAZE 100 5%	1/10W
C1225	1-163-038-00	CERAMIC CHIP 0.1MF		25V	R1204	1-216-025-00	METAL GLAZE 100 5%	1/10W
C1226	1-163-038-00	CERAMIC CHIP 0.1MF		25V	R1205	1-216-025-00	METAL GLAZE 100 5%	1/10W
C1227	1-126-964-11	ELECT 10MF	20%	50V	R1206	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
C1228	1-163-145-00	CERAMIC CHIP 0.0015MF	5%	50V	R1207	1-216-073-00	METAL GLAZE 10K 5%	1/10W
C1229	1-163-145-00	CERAMIC CHIP 0.0015MF	5%	50V	R1208	1-216-073-00	METAL GLAZE 10K 5%	1/10W
C1230	1-163-038-00	CERAMIC CHIP 0.1MF		25V	R1209	1-216-073-00	METAL GLAZE 10K 5%	1/10W
C1231	1-126-967-11	ELECT 47MF	20%	16V	R1210	1-216-073-00	METAL GLAZE 10K 5%	1/10W
C1232	1-163-038-00	CERAMIC CHIP 0.1MF		25V	R1211	1-216-073-00	METAL GLAZE 10K 5%	1/10W
C1233	1-126-967-11	ELECT 47MF	20%	16V	R1212	1-216-073-00	METAL GLAZE 10K 5%	1/10W
C1234	1-126-967-11	ELECT 47MF	20%	16V	R1213	1-216-073-00	METAL GLAZE 10K 5%	1/10W
C1235	1-163-038-00	CERAMIC CHIP 0.1MF		25V	R1214	1-216-081-00	METAL GLAZE 22K 5%	1/10W
C1236	1-163-038-00	CERAMIC CHIP 0.1MF		25V	R1215	1-216-081-00	METAL GLAZE 22K 5%	1/10W
C1237	1-163-038-00	CERAMIC CHIP 0.1MF		25V	R1220	1-216-001-00	METAL GLAZE 10 5%	1/10W
C1238	1-163-038-00	CERAMIC CHIP 0.1MF		25V		< CONNECTOR >		
CN1202	1-766-929-11	CONNECTOR, BOARD TO BOARD 8P						
CN1203	1-766-929-11	CONNECTOR, BOARD TO BOARD 8P						
CN1204	*1-564-519-11	PLUG, CONNECTOR 4P						

A1

A

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R1221	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W	C113	1-126-967-11	ELECT 47MF	20% 16V
R1222	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W	C115	1-102-112-00	CERAMIC 330PF	10% 50V
R1223	1-216-063-91	METAL GLAZE 3.9K 5%	1/10W	C120	1-163-117-00	CERAMIC CHIP 100PF	5% 50V
R1224	1-216-061-00	METAL GLAZE 3.3K 5%	1/10W	C121	1-163-113-00	CERAMIC CHIP 68PF	5% 50V
R1225	1-216-025-00	METAL GLAZE 100 5%	1/10W	C122	1-163-137-00	CERAMIC CHIP 680PF	5% 50V
R1226	1-216-061-00	METAL GLAZE 3.3K 5%	1/10W	C123	1-163-113-00	CERAMIC CHIP 68PF	5% 50V
R1227	1-216-063-91	METAL GLAZE 3.9K 5%	1/10W	C124	1-137-399-11	FILM 0.1MF	5% 50V
R1228	1-216-025-00	METAL GLAZE 100 5%	1/10W	C201	1-163-139-00	CERAMIC CHIP 820PF	10% 50V
R1229	1-216-001-00	METAL GLAZE 10 5%	1/10W	C202	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V
R1230	1-216-063-91	METAL GLAZE 3.9K 5%	1/10W	C203	1-126-933-11	ELECT 100MF	20% 16V
R1231	1-216-061-00	METAL GLAZE 3.3K 5%	1/10W	C204	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R1232	1-216-025-00	METAL GLAZE 100 5%	1/10W	C205	1-126-965-11	ELECT 22MF	20% 50V
R1233	1-216-061-00	METAL GLAZE 3.3K 5%	1/10W	C206	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V
R1234	1-216-063-91	METAL GLAZE 3.9K 5%	1/10W	C207	1-164-505-11	CERAMIC CHIP 2.2MF	16V
R1235	1-216-025-00	METAL GLAZE 100 5%	1/10W	C208	1-164-505-11	CERAMIC CHIP 2.2MF	16V
R1236	1-216-025-00	METAL GLAZE 100 5%	1/10W	C209	1-164-505-11	CERAMIC CHIP 2.2MF	16V
R1237	1-216-025-00	METAL GLAZE 100 5%	1/10W	C210	1-216-295-00	METAL GLAZE 0	5% 1/10W
R1238	1-216-025-00	METAL GLAZE 100 5%	1/10W	C211	1-164-505-11	CERAMIC CHIP 2.2MF	16V
R1239	1-216-025-00	METAL GLAZE 100 5%	1/10W	C212	1-164-346-11	CERAMIC CHIP 1MF	16V
*****							
*A-1632-516-A	A BOARD, COMPLETE (KV-28WS2B)	*****		C213	1-163-133-00	CERAMIC CHIP 470PF	5% 50V
*A-1632-471-A	A BOARD, COMPLETE (KV-28WS2D)	*****		C214	1-164-346-11	CERAMIC CHIP 1MF	16V
*A-1632-517-A	A BOARD, COMPLETE (KV-28WS2E)	*****		C215	1-163-133-00	CERAMIC CHIP 470PF	5% 50V
*A-1632-529-A	A BOARD, COMPLETE (KV-28WS2K)	*****		C216	1-126-967-11	ELECT 47MF	20% 16V
*A-1632-530-A	A BOARD, COMPLETE (KV-28WS2R)	*****		C217	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V
*A-1632-515-A	A BOARD, COMPLETE (KV-28WS2U)	*****		C218	1-126-967-11	ELECT 47MF	20% 16V
1-750-797-11	SOCKET, PLCC			C219	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V
< CAPACITOR >							
C1	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C223	1-163-133-00	CERAMIC CHIP 470PF	5% 50V
C2	1-126-965-11	ELECT 22MF	20% 50V	C224	1-164-346-11	CERAMIC CHIP 1MF	16V
C3	1-163-104-00	CERAMIC CHIP 30PF	5% 50V	C225	1-163-133-00	CERAMIC CHIP 470PF	5% 50V
C4	1-163-104-00	CERAMIC CHIP 30PF	5% 50V	C226	1-126-967-11	ELECT 47MF	20% 16V
C8	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C227	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V
C10	1-163-243-11	CERAMIC CHIP 47PF	5% 50V	C228	1-126-967-11	ELECT 47MF	20% 16V
C11	1-163-243-11	CERAMIC CHIP 47PF	5% 50V	C229	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V
C14	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C230	1-216-295-00	METAL GLAZE 0	5% 1/10W
C15	1-163-133-00	CERAMIC CHIP 470PF	5% 50V	C231	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C18	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C232	1-126-967-11	ELECT 47MF	20% 16V
C20	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V	C251	1-163-087-00	CERAMIC CHIP 4PF	0.25PF 50V
C21	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V	C252	1-163-087-00	CERAMIC CHIP 4PF	0.25PF 50V
C22	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	C253	1-163-117-00	CERAMIC CHIP 100PF	5% 50V
C43	1-163-121-00	CERAMIC CHIP 150PF	5% 50V	C254	1-163-109-00	CERAMIC CHIP 47PF	5% 50V
C45	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C255	1-163-117-00	CERAMIC CHIP 100PF	5% 50V
C80	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	C256	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C81	1-164-005-11	CERAMIC CHIP 0.47MF	25V	C257	1-126-965-11	ELECT 22MF	20% 50V
C82	1-163-037-11	CERAMIC CHIP 0.022MF	10% 50V	C258	1-126-964-11	ELECT 10MF	20% 50V
C90	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C259	1-164-336-11	CERAMIC CHIP 0.33MF	25V
C101	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C260	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C102	1-126-934-11	ELECT 220MF	20% 16V	C261	1-163-133-00	CERAMIC CHIP 470PF	5% 50V
C103	1-126-965-11	ELECT 22MF	20% 50V	C262	1-163-133-00	CERAMIC CHIP 470PF	5% 50V
C104	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	C263	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C110	1-126-967-11	ELECT 47MF	20% 16V	C264	1-126-962-11	ELECT 3.3MF	20% 50V
C112	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V	C265	1-126-964-11	ELECT 10MF	20% 50V
				C266	1-126-964-11	ELECT 10MF	20% 50V
				C267	1-126-965-11	ELECT 22MF	20% 50V
				C268	1-163-038-00	CERAMIC CHIP 0.1MF	25V
				C269	1-163-131-00	CERAMIC CHIP 390PF	5% 50V
				C270	1-163-131-00	CERAMIC CHIP 390PF	5% 50V

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C271	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V	C354	1-164-005-11	CERAMIC CHIP 0.47MF	25V
C272	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V	C355	1-126-965-11	ELECT 22MF	20% 50V
C273	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V	C356	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V
C274	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V	C357	1-163-133-00	CERAMIC CHIP 470PF	5% 50V
C275	1-164-346-11	CERAMIC CHIP 1MF	16V	C358	1-164-005-11	CERAMIC CHIP 0.47MF	25V
C276	1-164-346-11	CERAMIC CHIP 1MF	16V	C359	1-163-231-11	CERAMIC CHIP 15PF	5% 50V
C277	1-164-346-11	CERAMIC CHIP 1MF	16V	C360	1-163-231-11	CERAMIC CHIP 15PF	5% 50V
C278	1-164-346-11	CERAMIC CHIP 1MF	16V	C370	1-164-505-11	CERAMIC CHIP 2.2MF	16V
C279	1-126-965-11	ELECT 22MF	20%			(KV-28WS2B/28WS2D/28WS2E/28WS2K/28WS2R)	
C280	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C371	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V
C281	1-126-965-11	ELECT 22MF	20% 50V	C372	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V
C282	1-163-038-00	CERAMIC CHIP 0.1MF	25V			(KV-28WS2B/28WS2D/28WS2E/28WS2K/28WS2R)	
C300	1-163-109-00	CERAMIC CHIP 47PF	5% 50V	C373	1-164-489-11	CERAMIC CHIP 0.22MF	10% 16V
C301	1-163-038-00	CERAMIC CHIP 0.1MF	25V			(KV-28WS2B/28WS2D/28WS2E/28WS2K/28WS2R)	
C302	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V	C1001	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C303	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V	C1002	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C304	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C1010	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C305	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C1013	1-126-965-11	ELECT 22MF	20% 50V
C306	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V	C1014	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C307	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V	C1015	1-164-489-11	CERAMIC CHIP 0.22MF	10% 16V
C308	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V	C1020	1-163-101-00	CERAMIC CHIP 22PF	5% 50V
C309	1-164-346-11	CERAMIC CHIP 1MF	16V			< FILTER >	
C310	1-164-346-11	CERAMIC CHIP 1MF	16V	CF120	1-409-327-00	TRAP, CERAMIC (6.5MHz) (KV-28WS2B)	
C311	1-164-346-11	CERAMIC CHIP 1MF	16V			< CONNECTOR >	
C312	1-164-505-11	CERAMIC CHIP 2.2MF	16V	CN1	1-695-302-11	CONNECTOR, BOARD TO BOARD 50P	
C313	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V	CN2	*1-568-880-51	PIN, CONNECTOR 5P	
C315	1-216-295-00	METAL GLAZE 0 5%	1/10W	CN4	*1-568-878-51	PIN, CONNECTOR 3P	
C317	1-163-038-00	CERAMIC CHIP 0.1MF	25V	CN201	1-766-296-11	CONNECTOR, DUAL SCART	
C319	1-163-017-00	CERAMIC CHIP 0.0047MF	10% 50V	CN202	1-766-928-11	CONNECTOR, BOARD TO BOARD 8P	
C320	1-126-965-11	ELECT 22MF	20% 50V	CN203	1-766-928-11	CONNECTOR, BOARD TO BOARD 8P	
C321	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V	CN301	*1-568-882-51	PIN, CONNECTOR 7P	
C322	1-163-037-11	CERAMIC CHIP 0.22MF	10% 50V			< DIODE >	
C323	1-163-037-11	CERAMIC CHIP 0.22MF	10% 50V	D2	8-719-988-62	DIODE 1SS355	
C324	1-163-037-11	CERAMIC CHIP 0.22MF	10% 50V	D10	8-719-158-15	DIODE RD5.68-B	
C325	1-164-346-11	CERAMIC CHIP 1MF	16V	D11	8-719-158-15	DIODE RD5.68-B	
C326	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V	D12	8-719-158-15	DIODE RD5.68-B	
C327	1-137-374-11	FILM 0.047MF	5% 50V	D101	8-719-977-81	DIODE DTZ33B	
C328	1-126-964-11	ELECT 10MF	20% 50V	D201	8-719-977-22	DIODE DTZ9.1	
C329	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V	D202	8-719-977-22	DIODE DTZ9.1	
C330	1-130-777-00	FILM 0.1MF	5% 63V	D203	8-719-977-22	DIODE DTZ9.1	
C331	1-137-581-11	FILM 0.1MF	5% 100V	D204	8-719-977-22	DIODE DTZ9.1	
C332	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V	D205	8-719-977-22	DIODE DTZ9.1	
C333	1-126-933-11	ELECT 100MF	20% 16V	D206	8-719-977-22	DIODE DTZ9.1	
C334	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V	D207	8-719-977-22	DIODE DTZ9.1	
C335	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V	D208	8-719-977-22	DIODE DTZ9.1	
C336	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	D209	8-719-977-22	DIODE DTZ9.1	
C337	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	D210	8-719-977-22	DIODE DTZ9.1	
C338	1-164-346-11	CERAMIC CHIP 1MF	16V	D211	8-719-977-22	DIODE DTZ9.1	
C339	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V	D212	8-719-977-22	DIODE DTZ9.1	
C340	1-126-933-11	ELECT 100MF	20% 16V	D213	8-719-977-22	DIODE DTZ9.1	
C341	1-164-005-11	CERAMIC CHIP 0.47MF	25V	D214	8-719-977-22	DIODE DTZ9.1	
C342	1-164-346-11	CERAMIC CHIP 1MF	16V	D215	8-719-977-22	DIODE DTZ9.1	
C343	1-163-017-00	CERAMIC CHIP 0.0047MF	10% 50V	D216	8-719-158-15	DIODE RD5.68-B	
C344	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	D217	8-719-158-15	DIODE RD5.68-B	
C345	1-164-005-11	CERAMIC CHIP 0.47MF	25V	D218	8-719-158-15	DIODE RD5.68-B	
C348	1-163-038-00	CERAMIC CHIP 0.1MF	25V	D220	8-719-988-62	DIODE 1SS355	
C350	1-126-964-11	ELECT 10MF	20% 50V	D221	8-719-988-62	DIODE 1SS355	
C351	1-164-505-11	CERAMIC CHIP 2.2MF	16V				
C352	1-164-005-11	CERAMIC CHIP 0.47MF	25V				
C353	1-164-505-11	CERAMIC CHIP 2.2MF	16V				

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
D222	8-719-977-22	DIODE DTZ9.1		Q130	8-729-216-22	TRANSISTOR 2SA1162-G (KV-28WS2B)	
D223	8-719-977-22	DIODE DTZ9.1		Q201	8-729-920-74	TRANSISTOR 2SC2412K-QR	
D224	8-719-977-22	DIODE DTZ9.1		Q202	8-729-920-74	TRANSISTOR 2SC2412K-QR	
D225	8-719-977-22	DIODE DTZ9.1		Q205	8-729-901-01	TRANSISTOR DTC144EK	
D226	8-719-977-22	DIODE DTZ9.1		Q206	8-729-216-22	TRANSISTOR 2SA1162-G	
D227	8-719-977-13	DIODE DTZ-6.8C		Q207	8-729-216-22	TRANSISTOR 2SA1162-G	
D251	8-719-047-16	DIODE BAS216		Q300	8-729-901-01	TRANSISTOR DTC144EK	
D320	8-719-977-22	DIODE DTZ9.1		Q304	8-729-920-74	TRANSISTOR 2SC2412K-QR	
D370	8-719-047-16	DIODE BAS216	(KV-28WS2B/28WS2D/28WS2E/28WS2K/28WS2R)	Q305	8-729-920-74	TRANSISTOR 2SC2412K-QR	
D1010	8-719-036-58	DIODE MA3030-H(TX)		Q306	8-729-901-01	TRANSISTOR DTC144EK	
		< LINE FILTER >		Q330	8-729-216-22	TRANSISTOR 2SA1162-G	
FL101	1-236-071-11	ENCAPSULATED COMPONENT		Q331	8-729-920-74	TRANSISTOR 2SC2412K-QR	
FL201	1-236-071-11	ENCAPSULATED COMPONENT		Q332	8-729-920-74	TRANSISTOR 2SC2412K-QR	
FL202	1-236-071-11	ENCAPSULATED COMPONENT		Q1001	8-729-901-01	TRANSISTOR DTC144EK	
FL203	1-236-071-11	ENCAPSULATED COMPONENT		Q1002	8-729-216-22	TRANSISTOR 2SA1162-G	
FL1001	1-236-071-11	ENCAPSULATED COMPONENT				< RESISTOR >	
		< IC >		JR101	1-216-295-00	METAL GLAZE 0 5% 1/10W	
IC1	8-759-376-75	IC SDA5250M-C5-GEG		JR201	1-216-295-00	METAL GLAZE 0 5% 1/10W	
IC2	8-759-334-20	IC ST24E32MCTR		JR204	1-216-295-00	METAL GLAZE 0 5% 1/10W	
IC3	8-759-353-82	IC TMS27PC020-15FML		JR205	1-216-295-00	METAL GLAZE 0 5% 1/10W	
IC4	8-759-334-57	IC PST593C-MMP-4P		JR206	1-216-295-00	METAL GLAZE 0 5% 1/10W	
IC201	8-752-076-06	IC CXA2040Q-T4		JR207	1-216-295-00	METAL GLAZE 0 5% 1/10W	
IC202	8-759-376-80	IC MSP3410B-PS-F7-T (KV-28WS2B/28WS2E/28WS2U)		JR304	1-216-296-91	METAL GLAZE 0 5% 1/8W	
	8-759-376-56	IC MSP3400C-PS-C6-T (KV-28WS2D/28WS2K/28WS2R)		JR305	1-216-296-91	METAL GLAZE 0 5% 1/8W	
IC203	8-759-385-76	IC MC141052BDR2		R1	1-216-295-00	METAL GLAZE 0 5% 1/10W	
		< COIL >		R2	1-216-025-00	METAL GLAZE 100 5% 1/10W	
IC301	8-752-076-09	IC CXA2000Q-TL		R3	1-216-025-00	METAL GLAZE 100 5% 1/10W	
IC302	8-759-288-85	IC TDA4665T-T		R4	1-216-013-00	METAL GLAZE 33 5% 1/10W	
IC303	8-759-251-56	IC TDA8395T/M3 (KV-28WS2B/28WS2D/28WS2E/28WS2K/28WS2R)		R5	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
IC1001	8-759-376-76	IC SDA5273CP-GEG		R7	1-216-041-00	METAL GLAZE 470 5% 1/10W	
		< TRANSISTOR >		R8	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
L10	1-410-379-31	INDUCTOR CHIP 6.8UH		R9	1-216-041-00	METAL GLAZE 470 5% 1/10W	
L102	1-408-406-00	INDUCTOR 5.6UH (KV-28WS2B)		R10	1-216-041-00	METAL GLAZE 470 5% 1/10W	
L111	1-410-993-11	INDUCTOR CHIP 1UH		R11	1-216-041-00	METAL GLAZE 470 5% 1/10W	
L120	1-408-408-00	INDUCTOR 8.2UH		R12	1-216-041-00	METAL GLAZE 470 5% 1/10W	
L121	1-408-397-00	INDUCTOR 1UH		R18	1-216-025-00	METAL GLAZE 100 5% 1/10W	
L122	1-408-408-00	INDUCTOR 8.2UH		R19	1-216-025-00	METAL GLAZE 100 5% 1/10W	
L300	1-408-607-31	INDUCTOR 2.2UH		R20	1-216-025-00	METAL GLAZE 100 5% 1/10W	
		< TRANSISTOR >		R21	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q1	8-729-920-74	TRANSISTOR 2SC2412K-QR		R24	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q4	8-729-920-74	TRANSISTOR 2SC2412K-QR		R25	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q15	8-729-216-22	TRANSISTOR 2SA1162-G		R28	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q17	8-729-216-22	TRANSISTOR 2SA1162-G		R29	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q80	8-729-920-74	TRANSISTOR 2SC2412K-QR		R30	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q81	8-729-216-22	TRANSISTOR 2SA1162-G		R31	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q110	8-729-920-74	TRANSISTOR 2SC2412K-QR		R32	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q111	8-729-216-22	TRANSISTOR 2SA1162-G		R33	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q112	8-729-920-74	TRANSISTOR 2SC2412K-QR		R34	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q113	8-729-216-22	TRANSISTOR 2SA1162-G		R35	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q114	8-729-216-22	TRANSISTOR 2SA1162-G		R36	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q120	8-729-920-74	TRANSISTOR 2SC2412K-QR		R37	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q121	8-729-920-74	TRANSISTOR 2SC2412K-QR (KV-28WS2B)		R38	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q122	8-729-920-74	TRANSISTOR 2SC2412K-QR		R39	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
Q124	8-729-920-74	TRANSISTOR 2SC2412K-QR (KV-28WS2B)		R40	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
				R42	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
				R44	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
				R46	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
				R47	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
				R48	1-216-121-91	METAL GLAZE 1M 5% 1/10W	

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R49	1-216-025-00	METAL GLAZE	100 5% 1/10W	R118	1-216-071-00	METAL GLAZE	8.2K 5% 1/10W
R50	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R119	1-216-033-00	METAL GLAZE	220 5% 1/10W
R51	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W	R120	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W
R52	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R121	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R53	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W	R122	1-216-041-00	METAL GLAZE	470 5% 1/10W
R54	1-216-025-00	METAL GLAZE	100 5% 1/10W	R123	1-216-031-00	METAL GLAZE	180 5% 1/10W
R58	1-216-063-91	METAL GLAZE	3.9K 5% 1/10W	R124	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R59	1-216-025-00	METAL GLAZE	100 5% 1/10W	R125	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R60	1-216-025-00	METAL GLAZE	100 5% 1/10W	R126	1-216-025-00	METAL GLAZE	100 5% 1/10W
R61	1-216-025-00	METAL GLAZE	100 5% 1/10W	R127	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R62	1-216-025-00	METAL GLAZE	100 5% 1/10W	R128	1-216-035-00	METAL GLAZE	270 5% 1/10W
R63	1-216-025-00	METAL GLAZE	100 5% 1/10W	R129	1-216-037-00	METAL GLAZE	330 5% 1/10W
R64	1-216-025-00	METAL GLAZE	100 5% 1/10W	R130	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W
R65	1-216-025-00	METAL GLAZE	100 5% 1/10W	R131	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R66	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R132	1-216-025-00	METAL GLAZE	100 5% 1/10W
R67	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R133	1-216-041-00	METAL GLAZE	470 5% 1/10W
R69	1-216-025-00	METAL GLAZE	100 5% 1/10W	R134	1-216-001-00	METAL GLAZE	10 5% 1/10W
R70	1-216-025-00	METAL GLAZE	100 5% 1/10W	R135	1-216-045-00	METAL GLAZE	680 5% 1/10W
R71	1-216-025-00	METAL GLAZE	100 5% 1/10W	R136	1-216-033-00	METAL GLAZE	220 5% 1/10W
R72	1-216-025-00	METAL GLAZE	100 5% 1/10W	R137	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R73	1-216-025-00	METAL GLAZE	100 5% 1/10W	R138	1-216-041-00	METAL GLAZE	470 5% 1/10W
R74	1-216-025-00	METAL GLAZE	100 5% 1/10W	R200	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R75	1-216-025-00	METAL GLAZE	100 5% 1/10W	R201	1-216-033-00	METAL GLAZE	220 5% 1/10W
R76	1-216-025-00	METAL GLAZE	100 5% 1/10W	R202	1-216-033-00	METAL GLAZE	220 5% 1/10W
R77	1-216-025-00	METAL GLAZE	100 5% 1/10W	R203	1-216-025-00	METAL GLAZE	100 5% 1/10W
R78	1-216-025-00	METAL GLAZE	100 5% 1/10W	R204	1-216-025-00	METAL GLAZE	100 5% 1/10W
R79	1-216-033-00	METAL GLAZE	220 5% 1/10W	R205	1-216-689-11	METAL GLAZE	39K 5% 1/10W
R80	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R206	1-216-033-00	METAL GLAZE	220 5% 1/10W
R81	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R208	1-216-041-00	METAL GLAZE	470 5% 1/10W
R82	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R209	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R83	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R210	1-216-017-91	METAL GLAZE	47 5% 1/10W
R84	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R211	1-216-033-00	METAL GLAZE	220 5% 1/10W
R85	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R212	1-216-022-00	METAL GLAZE	75 5% 1/10W
R86	1-216-077-00	METAL GLAZE	15K 5% 1/10W	R213	1-216-022-00	METAL GLAZE	75 5% 1/10W
R87	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R214	1-216-025-00	METAL GLAZE	100 5% 1/10W
R88	1-216-025-00	METAL GLAZE	100 5% 1/10W	R216	1-216-025-00	METAL GLAZE	100 5% 1/10W
R91	1-216-025-00	METAL GLAZE	100 5% 1/10W	R217	1-216-113-00	METAL GLAZE	470K 5% 1/10W
R92	1-216-025-00	METAL GLAZE	100 5% 1/10W	R218	1-216-025-00	METAL GLAZE	100 5% 1/10W
R93	1-216-033-00	METAL GLAZE	220 5% 1/10W	R219	1-216-113-00	METAL GLAZE	470K 5% 1/10W
R94	1-216-033-00	METAL GLAZE	220 5% 1/10W	R220	1-216-295-00	METAL GLAZE	0 5% 1/10W
R95	1-216-033-00	METAL GLAZE	220 5% 1/10W	R221	1-216-039-00	METAL GLAZE	390 5% 1/10W
R97	1-216-295-00	METAL GLAZE	0 5% 1/10W	R222	1-216-089-00	METAL GLAZE	47K 5% 1/10W
R98	1-216-295-00	METAL GLAZE	0 5% 1/10W	R223	1-216-295-00	METAL GLAZE	0 5% 1/10W
R101	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W	R224	1-216-039-00	METAL GLAZE	390 5% 1/10W
R102	1-216-025-00	METAL GLAZE	100 5% 1/10W	R225	1-216-089-00	METAL GLAZE	47K 5% 1/10W
R103	1-216-025-00	METAL GLAZE	100 5% 1/10W	R226	1-216-033-00	METAL GLAZE	220 5% 1/10W
R104	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R227	1-216-022-00	METAL GLAZE	75 5% 1/10W
R105	1-216-113-00	METAL GLAZE	470K 5% 1/10W	R228	1-216-022-00	METAL GLAZE	75 5% 1/10W
R106	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R229	1-216-033-00	METAL GLAZE	220 5% 1/10W
R110	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R230	1-216-022-00	METAL GLAZE	75 5% 1/10W
R111	1-216-029-00	METAL GLAZE	150 5% 1/10W	R232	1-216-025-00	METAL GLAZE	100 5% 1/10W
R112	1-216-029-00	METAL GLAZE	150 5% 1/10W	R233	1-216-025-00	METAL GLAZE	100 5% 1/10W
R113	1-216-001-00	METAL GLAZE	10 5% 1/10W	R234	1-216-113-00	METAL GLAZE	470K 5% 1/10W
R114	1-216-029-00	METAL GLAZE	150 5% 1/10W	R235	1-216-025-00	METAL GLAZE	100 5% 1/10W
R115	1-216-037-00	METAL GLAZE	330 5% 1/10W	R236	1-216-113-00	METAL GLAZE	470K 5% 1/10W
R116	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R237	1-216-295-00	METAL GLAZE	0 5% 1/10W
R117	1-216-055-00	METAL GLAZE	1.8K 5% 1/10W (KV-28WS2B/28WS2D/28WS2E/28WS2K/28WS2R)	R238	1-216-089-00	METAL GLAZE	47K 5% 1/10W
	1-216-056-00	METAL GLAZE	2.0K 5% 1/10W (KV-28WS2U)	R239	1-216-039-00	METAL GLAZE	390 5% 1/10W
				R240	1-216-295-00	METAL GLAZE	0 5% 1/10W
				R241	1-216-089-00	METAL GLAZE	47K 5% 1/10W

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK					
R242	1-216-039-00	METAL GLAZE	390 5% 1/10W	R344	1-216-067-00	METAL GLAZE	5.6K 5% 1/10W					
R243	1-216-033-00	METAL GLAZE	220 5% 1/10W	R345	1-216-025-00	METAL GLAZE	100 5% 1/10W					
R244	1-216-033-00	METAL GLAZE	220 5% 1/10W	R346	1-216-063-91	METAL GLAZE	3.9K 5% 1/10W					
R245	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R347	1-216-025-00	METAL GLAZE	100 5% 1/10W					
R246	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W	R348	1-216-025-00	METAL GLAZE	100 5% 1/10W					
R247	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W	R349	1-216-025-00	METAL GLAZE	100 5% 1/10W					
R249	1-216-001-00	METAL GLAZE	10 5% 1/10W	R350	1-216-042-00	METAL GLAZE	510 5% 1/10W					
R251	1-216-025-00	METAL GLAZE	100 5% 1/10W	R351	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W					
R252	1-216-025-00	METAL GLAZE	100 5% 1/10W	R352	1-216-077-00	METAL GLAZE	15K 5% 1/10W					
R253	1-216-025-00	METAL GLAZE	100 5% 1/10W	R353	1-216-033-00	METAL GLAZE	220 5% 1/10W					
R254	1-216-025-00	METAL GLAZE	100 5% 1/10W	R354	1-216-295-00	METAL GLAZE	0 5% 1/10W					
R255	1-216-025-00	METAL GLAZE	100 5% 1/10W	R357	1-216-049-00	METAL GLAZE	1K 5% 1/10W					
R256	1-216-025-00	METAL GLAZE	100 5% 1/10W	R370	1-216-295-00	METAL GLAZE	0 5% 1/10W					
R270	1-216-022-00	METAL GLAZE	75 5% 1/10W	R1001	1-216-025-00	METAL GLAZE	100 5% 1/10W					
R271	1-216-022-00	METAL GLAZE	75 5% 1/10W	R1002	1-216-025-00	METAL GLAZE	100 5% 1/10W					
R272	1-216-022-00	METAL GLAZE	75 5% 1/10W	R1010	1-216-295-00	METAL GLAZE	0 5% 1/10W					
R273	1-216-022-00	METAL GLAZE	75 5% 1/10W	R1012	1-216-041-00	METAL GLAZE	470 5% 1/10W					
R280	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R1014	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W					
R281	1-216-089-00	METAL GLAZE	47K 5% 1/10W	R1020	1-216-097-00	METAL GLAZE	100K 5% 1/10W					
R282	1-216-093-00	METAL GLAZE	68K 5% 1/10W	R1021	1-216-029-00	METAL GLAZE	150 5% 1/10W					
R284	1-216-089-00	METAL GLAZE	47K 5% 1/10W	R1022	1-216-029-00	METAL GLAZE	150 5% 1/10W					
R285	1-216-093-00	METAL GLAZE	68K 5% 1/10W	R1023	1-216-029-00	METAL GLAZE	150 5% 1/10W					
R300	1-216-025-00	METAL GLAZE	100 5% 1/10W	R1024	1-216-025-00	METAL GLAZE	100 5% 1/10W					
R301	1-216-033-00	METAL GLAZE	220 5% 1/10W	R1026	1-216-025-00	METAL GLAZE	100 5% 1/10W					
R302	1-216-295-00	METAL GLAZE	0 5% 1/10W	R1027	1-216-025-00	METAL GLAZE	100 5% 1/10W					
R303	1-216-295-00	METAL GLAZE	0 5% 1/10W	R1028	1-216-025-00	METAL GLAZE	100 5% 1/10W					
R308	1-216-025-00	METAL GLAZE	100 5% 1/10W	< TUNER >								
R309	1-216-033-00	METAL GLAZE	220 5% 1/10W	TU101	1-693-338-11	TUNER/VIF (AEP)	(KV-28WS2D/28WS2E/28WS2K/28WS2R)					
R310	1-216-033-00	METAL GLAZE	220 5% 1/10W	1-693-340-11 TUNER/VIF (FR) (KV-28WS2B)								
R311	1-216-295-00	METAL GLAZE	0 5% 1/10W	1-693-339-11 TUNER/VIF (UK) (KV-28WS2U)								
R312	1-216-295-00	METAL GLAZE	0 5% 1/10W	< CRYSTAL >								
R313	1-216-295-00	METAL GLAZE	0 5% 1/10W	X1	1-767-154-21	VIBRATOR, CERAMIC						
R314	1-216-295-00	METAL GLAZE	0 5% 1/10W	X201	1-760-628-11	VIBRATOR, CRYSTAL 18.432MHz						
R315	1-216-295-00	METAL GLAZE	0 5% 1/10W	X301	1-567-504-11	OSCILLATOR, CRYSTAL						
R316	1-216-033-00	METAL GLAZE	220 5% 1/10W	X302	1-567-505-11	OSCILLATOR, CRYSTAL						
R318	1-216-689-11	METAL GLAZE	39K 5% 1/10W	X303	1-767-127-11	VIBRATOR, CERAMIC						
R319	1-216-081-00	METAL GLAZE	22K 5% 1/10W	X1001	1-579-965-21	VIBRATOR, CRYSTAL						
R320	1-216-025-00	METAL GLAZE	100 5% 1/10W	*****								
R321	1-216-025-00	METAL GLAZE	100 5% 1/10W	*A-1638-079-A C BOARD, COMPLETE								
R322	1-216-025-00	METAL GLAZE	100 5% 1/10W	*****								
R323	1-216-033-00	METAL GLAZE	220 5% 1/10W	< CAPACITOR >								
R324	1-216-063-91	METAL GLAZE	3.9K 5% 1/10W	C702	1-102-115-00	CERAMIC	560PF	10%	50V			
R326	1-216-025-00	METAL GLAZE	100 5% 1/10W	C703	1-102-116-00	CERAMIC	680PF	10%	50V			
R327	1-216-025-00	METAL GLAZE	100 5% 1/10W	C708	1-162-114-00	CERAMIC	0.0047MF	2KV				
R328	1-216-129-00	METAL GLAZE	2.2M 5% 1/10W	C710	1-107-652-11	ELECT	10MF	20%	250V			
R329	1-216-089-00	METAL GLAZE	47K 5% 1/10W	C712	1-102-116-00	CERAMIC	680PF	10%	50V			
R330	1-216-025-00	METAL GLAZE	100 5% 1/10W	C714	1-126-967-11	ELECT	47MF	20%	16V			
R331	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W	C717	1-102-114-00	CERAMIC	470PF	10%	50V			
R332	1-216-025-00	METAL GLAZE	100 5% 1/10W	C718	1-102-114-00	CERAMIC	470PF	10%	50V			
R333	1-216-075-00	METAL GLAZE	12K 5% 1/10W	C719	1-102-114-00	CERAMIC	470PF	10%	50V			
R334	1-216-041-00	METAL GLAZE	470 5% 1/10W	C722	1-101-880-00	CERAMIC	47PF	5%	50V			
R335	1-208-806-11	METAL CHIP	10K 0.50% 1/10W	C723	1-101-880-00	CERAMIC	47PF	5%	50V			
R336	1-216-109-00	METAL GLAZE	330K 5% 1/10W	C724	1-101-880-00	CERAMIC	47PF	5%	50V			
R337	1-216-025-00	METAL GLAZE	100 5% 1/10W									
R338	1-216-051-00	METAL GLAZE	1.2K 5% 1/10W									
R339	1-216-049-00	METAL GLAZE	1K 5% 1/10W									
R340	1-216-025-00	METAL GLAZE	100 5% 1/10W									
R341	1-216-025-00	METAL GLAZE	100 5% 1/10W									
R342	1-216-049-00	METAL GLAZE	1K 5% 1/10W									
R343	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W									

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KV-28WS2

C D2 D3

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK				
< CONNECTOR >											
CN701	1-778-037-11	PIN, CONNECTOR (5MM PITCH) 6P		R729	1-249-408-11	CARBON	180 5% 1/4W				
CN702	1-695-915-11	TAB (CONTACT)		R731	1-249-423-11	CARBON	3.3K 5% 1/4W				
CN703	*1-568-882-51	PIN, CONNECTOR 7P		R733	1-249-415-11	CARBON	680 5% 1/4W				
< DIODE >											
D701	8-719-109-72	DIODE RD3.9ES-B2		R734	1-247-807-31	CARBON	100 5% 1/4W				
D702	8-719-991-33	DIODE 1SS133T-77		R735	1-249-415-11	CARBON	680 5% 1/4W				
D706	8-719-991-33	DIODE 1SS133T-77		R736	1-216-486-00	METAL OXIDE	8.2K 5% 3W F				
D707	8-719-991-33	DIODE 1SS133T-77		R739	1-249-417-11	CARBON	1K 5% 1/4W				
D708	8-719-991-33	DIODE 1SS133T-77		R740	1-249-415-11	CARBON	680 5% 1/4W				
D709	8-719-991-33	DIODE 1SS133T-77		R741	1-202-549-00	SOLID	100 20% 1/2W				
D710	8-719-991-33	DIODE 1SS133T-77		R744	1-249-421-11	CARBON	2.2K 5% 1/4W				
D711	8-719-302-43	DIODE EL1Z		R745	1-249-421-11	CARBON	2.2K 5% 1/4W				
D714	8-719-991-33	DIODE 1SS133T-77		R746	1-249-421-11	CARBON	2.2K 5% 1/4W				
D715	8-719-991-33	DIODE 1SS133T-77		R747	1-249-437-11	CARBON	47K 5% 1/4W				
D716	8-719-991-33	DIODE 1SS133T-77		R748	1-249-417-11	CARBON	1K 5% 1/4W				
D717	8-719-991-33	DIODE 1SS133T-77		R749	1-249-435-11	CARBON	33K 5% 1/4W				
D718	8-719-991-33	DIODE 1SS133T-77		< VARIABLE RESISTOR >							
D719	8-719-991-33	DIODE 1SS133T-77		RV701	1-230-641-11	RES, ADJ, METAL GLAZE	2.2M				
D720	8-719-991-33	DIODE 1SS133T-77		RV702	1-241-656-21	RES, ADJ, METAL FILM	110M				
*****											
*A-1640-214-A D2 BOARD, COMPLETE											
*****											
< CAPACITOR >											
C1801	1-126-967-11	ELECT	47MF 20% 50V	C1803	1-137-368-11	FILM	0.0047MF 5% 50V				
C1804	1-126-964-11	ELECT	10MF 20% 50V	C1807	1-137-366-11	FILM	0.0022MF 5% 50V				
< CONNECTOR >											
CN1801	1-573-299-21	CONNECTOR, BOARD TO BOARD	10P	CN1803	*1-568-878-51	PIN, CONNECTOR	3P				
< DIODE >											
D1802	8-719-110-17	DIODE RD10ESB2		< IC >							
IC1801 8-759-701-59 IC NJM78M09FA											
IC1802 8-759-603-37 IC M5216P											
< LINK IC >											
JW1802 $\triangle$ 1-532-605-91 LINK, IC 0.4A (ICP-F10)											
< RESISTOR >											
R704	1-216-486-00	METAL OXIDE	8.2K 5% 3W F	R1807	1-247-883-00	CARBON	150K 5% 1/4W				
R705	1-260-103-11	CARBON	2.2K 5% 1/2W	R1809	1-249-429-11	CARBON	10K 5% 1/4W				
R706	1-247-815-91	CARBON	220 5% 1/4W	R1810	1-249-429-11	CARBON	10K 5% 1/4W				
R707	1-249-408-11	CARBON	180 5% 1/4W	R1811	1-249-429-11	CARBON	10K 5% 1/4W				
R709	1-202-844-00	SOLID	330K 10% 1/2W	R1812	1-249-429-11	CARBON	10K 5% 1/4W				
*****											
R711	1-249-423-11	CARBON	3.3K 5% 1/4W	*A-1640-235-A D3 BOARD, COMPLETE							
R712	1-260-103-11	CARBON	2.2K 5% 1/2W	*****							
R714	1-216-486-00	METAL OXIDE	8.2K 5% 3W F	< CAPACITOR >							
R715	1-249-417-11	CARBON	1K 5% 1/4W	C2802	1-126-965-11	ELECT	22MF 20% 50V				
R716	1-247-815-91	CARBON	220 5% 1/4W	*****							
R717	1-249-408-11	CARBON	180 5% 1/4W	— 79 —							
R718	1-202-814-11	SOLID	33K 10% 1/2W	—							
R720	1-249-423-11	CARBON	3.3K 5% 1/4W	—							
R722	1-202-848-00	SOLID	680K 10% 1/2W	—							
R723	1-249-417-11	CARBON	1K 5% 1/4W	—							
R724	1-202-846-00	SOLID	470K 10% 1/2W	—							
R726	1-260-103-11	CARBON	2.2K 5% 1/2W	—							
R727	1-247-815-91	CARBON	220 5% 1/4W	—							
R728	1-216-350-11	METAL OXIDE	1.2 5% 1W F	—							

**KV-28WS2**
**D3 D**

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
< CONNECTOR >							
CN2801	1-568-878-51	PIN, CONNECTOR 3P		C614	1-128-526-11	ELECT	100MF 20% 25V
CN2802	*1-580-798-11	CONNECTOR PIN (DY) 6P		C615	1-111-067-11	ELECT	0.001MF 20% 25V
CN2803	*1-580-798-11	CONNECTOR PIN (DY) 6P		C616	1-111-067-11	ELECT	0.001MF 20% 25V
				C617	1-128-339-51	ELECT	2200MF 20% 16V
				C618	1-136-165-00	FILM	0.1MF 5% 50V
< DIODE >							
D2801	8-719-991-33	DIODE 1SS133T-77		C619	1-102-228-00	CERAMIC	470PF 10% 500V
				C620	1-102-228-00	CERAMIC	470PF 10% 500V
				C621	1-136-165-00	FILM	0.1MF 5% 50V
				C622	1-107-925-11	ELECT	1.0MF 20% 100V
				C623	1-104-666-11	ELECT	220MF 20% 25V
< TRANSISTOR >							
Q2801	8-729-119-78	TRANSISTOR 2SC2785-HFE		C624	1-136-165-00	FILM	0.1MF 5% 50V
				C625	1-126-967-11	ELECT	47MF 20% 50V
				C626	1-104-666-11	ELECT	220MF 20% 25V
				C628	1-126-964-11	ELECT	10MF 20% 50V
R2801	1-249-421-11	CARBON	2.2K 5% 1/4W	C629	1-111-097-11	ELECT	2200MF 20% 35V
< RELAY >							
RY2801	1-755-068-11	RELAY		C630	1-111-097-11	ELECT	2200MF 20% 35V
				C631	1-126-965-11	ELECT	22MF 20% 50V
				C632	1-104-666-11	ELECT	220MF 20% 25V
				C633 ▲	1-107-563-12	FILM	0.1MF 20% 300V
				C634 ▲	1-107-563-12	FILM	0.1MF 20% 300V
T2801	1-411-981-11	COIL, CHOKE 245UH		C635 ▲	1-107-563-12	FILM	0.1MF 20% 300V
*****							
*A-1642-190-A D BOARD, COMPLETE							
*****							
4-201-023-01 SPACER, INSULATING							
4-202-373-01 SPRING, IC							
< CAPACITOR >							
C502	1-102-824-00	CERAMIC	470PF 5% 50V	C804	1-136-165-00	FILM	0.1MF 5% 50V
C503	1-136-165-00	FILM	0.1MF 5% 50V	C805	1-136-207-11	FILM	0.047MF 10% 250V
C504	1-102-824-00	CERAMIC	470PF 5% 50V	C806	1-104-999-11	NYLAR	0.1MF 10% 200V
C506	1-126-941-11	ELECT	470MF 20% 25V	C807	1-136-109-00	FILM	0.68MF 5% 200V
C507	1-109-953-11	ELECT	2.2MF 20% 50V	C808	1-136-104-00	FILM	0.16MF 5% 200V
C509	1-136-165-00	FILM	0.1MF 5% 50V	C810	1-107-683-11	ELECT	2.2MF 0% 250V
C510	1-126-969-11	ELECT	220MF 20% 50V	C811	1-102-212-00	CERAMIC	820PF 10% 500V
C511	1-136-202-11	FILM	0.33MF 5% 63V	C812	1-136-540-11	FILM	0.82MF 5% 200V
C513	1-106-220-00	NYLAR	0.1MF 10% 100V	C813	1-129-722-00	FILM	0.047MF 10% 630V
C514	1-136-165-00	FILM	0.1MF 5% 50V	C814	1-136-084-00	FILM	0.0145MF 3% 2KV
C515	1-126-941-11	ELECT	470MF 20% 25V	C815	1-137-047-11	FILM	0.01MF 10% 400V
C517	1-126-941-11	ELECT	470MF 20% 25V	C816	1-162-134-11	CERAMIC	470PF 10% 2KV
C518	1-102-228-00	CERAMIC	470PF 10% 500V	C817	1-162-116-00	CERAMIC	680PF 10% 2KV
C519	1-102-228-00	CERAMIC	470PF 10% 500V	C818	1-162-134-11	CERAMIC	470PF 10% 2KV
C520	1-126-941-11	ELECT	470MF 20% 25V	C819	1-136-208-11	FILM	0.068MF 10% 250V
C521	1-107-698-11	ELECT	10MF 20% 25V	C820	1-102-114-00	CERAMIC	470PF 10% 50V
C522	1-126-964-11	ELECT	10MF 20% 50V	C821	1-162-114-00	CERAMIC	0.0047MF 2KV
C523	1-136-165-00	FILM	0.1MF 5% 50V	C822	1-107-662-11	ELECT	22MF 20% 250V
C600 ▲	1-113-890-51	ELECT	0.0022MF 20% 250V	C824	1-123-024-21	ELECT	33MF 10% 160V
C601 ▲	1-161-964-91	CERAMIC	0.0047MF 250V	C829	1-124-902-00	ELECT	0.47MF 20% 50V
C602 ▲	1-161-964-91	CERAMIC	0.0047MF 250V	C830	1-124-902-00	ELECT	0.47MF 20% 50V
C603	1-125-555-11	ELECT	330MF 20% 400V	C832	1-124-903-11	ELECT	1MF 20% 50V
C604	1-126-968-11	ELECT	100MF 20% 50V	C834	1-128-551-11	ELECT	22MF 20% 25V
C605	1-107-929-11	ELECT	10MF 20% 100V	C835	1-162-318-11	CERAMIC	0.001MF 10% 500V
C606	1-162-318-11	CERAMIC	0.001MF 10% 500V	C836	1-162-117-00	CERAMIC	100PF 10% 500V
C607	1-104-666-11	ELECT	220MF 20% 25V	C837	1-102-978-00	CERAMIC	220PF 5% 50V
C608	1-109-880-11	FILM	0.0015MF 3% 2KV	C838	1-102-228-00	CERAMIC	470PF 10% 500V
C611	1-102-228-00	CERAMIC	470PF 10% 500V	C839	1-136-207-11	FILM	0.047MF 10% 250V
C612	1-111-160-91	ELECT	22MF 20% 100V	C845	1-101-880-00	CERAMIC	47PF 5% 50V
C613	1-124-347-00	ELECT	100MF 20% 160V	C901	1-101-810-00	CERAMIC	100PF 5% 500V



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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK	
C902	1-137-372-11	FILM	0.022MF	5%	50V	D609	8-719-301-64	DIODE RU4D8
C903	1-137-372-11	FILM	0.022MF	5%	50V	D610	8-719-046-74	DIODE AU-01Z-V1
C904	1-104-665-11	ELECT	100MF	20%	25V	D611	8-719-058-38	DIODE FMN-G12S
C905	1-126-964-11	ELECT	10MF	20%	50V	D612	8-719-046-76	DIODE RU-3YY-V1
C906	1-126-964-11	ELECT	10MF	20%	50V	D613	8-719-058-38	DIODE FMN-G12S
C907	1-126-964-11	ELECT	10MF	20%	50V	D614	8-719-058-38	DIODE FMN-G12S
C908	1-126-964-11	ELECT	10MF	20%	50V	D615	8-719-046-75	DIODE EU-1-V1
C911	1-126-964-11	ELECT	10MF	20%	50V	D616	8-719-110-03	DIODE RD7.5RSB2
C913	1-101-810-00	CERAMIC	100PF	5%	500V	D617	8-719-991-33	DIODE 1SS133T-77
C914	1-101-004-00	CERAMIC	0.01MF		50V	D618	8-719-991-33	DIODE 1SS133T-77
C915	1-136-166-00	FILM	0.12MF	5%	50V	D619	8-719-991-33	DIODE 1SS133T-77
C1200	1-136-165-00	FILM	0.1MF	5%	50V	D620	8-719-991-33	DIODE 1SS133T-77
C1201	1-136-173-00	FILM	0.47MF	5%	50V	D622	8-719-923-60	DIODE MTZJ-T-77-9.1A
C1202	1-136-173-00	FILM	0.47MF	5%	50V	D625	8-719-991-33	DIODE 1SS133T-77
C1203	1-136-169-00	FILM	0.22MF	5%	50V	D626	8-719-046-74	DIODE AU-01Z-V1
C1204	1-136-169-00	FILM	0.22MF	5%	50V	D631	8-719-109-93	DIODE RD6.2ES-B2
C1205	1-101-005-00	CERAMIC	0.022MF		50V	D800	8-719-991-33	DIODE 1SS133T-77
C1206	1-101-005-00	CERAMIC	0.022MF		50V	D801	8-719-991-33	DIODE 1SS133T-77
C1207	1-126-933-11	ELECT	100MF	20%	16V	D802	8-719-991-33	DIODE 1SS133T-77
C1208	1-126-963-11	ELECT	4.7MF	20%	50V	D803	8-719-908-03	DIODE GP08D
C1209	1-126-963-11	ELECT	4.7MF	20%	50V	D807	8-719-302-43	DIODE EL1Z
C1212	1-162-318-11	CERAMIC	0.001MF	10%	500V	D808	8-719-908-03	DIODE GP08D
C1213	1-162-318-11	CERAMIC	0.001MF	10%	500V	D809	8-719-018-82	DIODE RGP02-20EL-6394
C1214	1-126-933-11	ELECT	100MF	20%	16V	D810	8-719-302-43	DIODE EL1Z
C1215	1-136-173-00	FILM	0.47MF	5%	50V	D812	8-719-038-49	DIODE FMS-3FU-LF027-103
C1216	1-137-366-11	FILM	0.0022MF	5%	50V	D815	8-719-908-03	DIODE GP08D
C1217	1-137-366-11	FILM	0.0022MF	5%	50V	D817	8-719-109-85	DIODE RD5.1ES-B2
C1218	1-126-935-11	ELECT	470MF	20%	16V	D901	8-719-030-11	DIODE SLA-570KT3F
< CONNECTOR >								
CN600	1-508-786-11	PIN, CONNECTOR (5MM PITCH) 2P						
CN601	1-508-765-11	PIN, CONNECTOR (5MM PITCH) 3P						
CN603	*1-580-844-11	PIN, CONNECTOR (POWER)						
CN800	*1-580-798-11	CONNECTOR PIN (DY) 6P						
CN801	*1-573-296-21	CONNECTOR, BOARD TO BOARD 10P						
< FUSE >								
F601	1-576-232-21	FUSE (H.B.C.) 5A/250V						
	1-533-230-12	HOLDER, FUSE ;F601						
< FERRITE BEAD >								
FB600	1-410-397-21	FERRITE BEAD INDUCTOR 1.1UH						
FB601	1-410-397-21	FERRITE BEAD INDUCTOR 1.1UH						
FB602	1-410-397-21	FERRITE BEAD INDUCTOR 1.1UH						
FB604	1-410-396-41	FERRITE BEAD INDUCTOR 0.45UH						
FB605	1-410-396-41	FERRITE BEAD INDUCTOR 0.45UH						
FB606	1-410-397-21	FERRITE BEAD INDUCTOR 1.1UH						
FB607	1-410-397-21	FERRITE BEAD INDUCTOR 1.1UH						
FB608	1-410-396-41	FERRITE BEAD INDUCTOR 0.45UH						
FB800	1-410-396-41	FERRITE BEAD INDUCTOR 0.45UH						
< IC >								
IC500	8-759-192-71	IC STV9379						
IC600	8-749-010-92	IC STR-86709						
IC601	8-749-924-92	IC TLP721(D4-)						
IC602	8-749-920-61	IC SE-135N						
IC603	8-759-144-82	IC µPC2405HF						
IC604	8-759-510-52	IC TEA7605						
IC606	8-759-267-25	IC LM2940T-9.0						
IC800	8-759-103-93	IC µPC393C						
IC900	8-747-905-11	RAY CATCHER ELEMENT SBX1790-51						

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
IC901	8-749-012-12	IC IS474					
IC1200	8-759-250-68	IC TDA7264					
IC1201	8-759-502-21	IC TDA2822M					
		< JACK SOCKET >					
J900	1-764-606-11	JACK					
J1200	1-770-218-11	JACK, PIN					
		< COIL >					
L502	1-412-519-11	INDUCTOR	3.3UH				
L503	1-412-519-11	INDUCTOR	3.3UH				
L609	1-412-533-21	INDUCTOR	47UH				
L611	1-412-527-11	INDUCTOR	15UH				
L612	1-412-522-41	INDUCTOR	5.6UH				
L613	1-412-522-41	INDUCTOR	5.6UH				
L615	1-412-529-11	INDUCTOR	22UH				
L616	1-412-533-21	INDUCTOR	47UH				
L801	1-459-111-00	COIL, DRAM CORE (CDI)					
L802	1-459-104-00	COIL, WITH CORE					
L803	1-420-872-00	COIL, AIR-CORE					
L804	1-429-306-11	TRANSFORMER, HORIZONTAL LINEARITY					
L805	1-406-674-11	COIL, CHOKE 3.3MHH					
L806	1-412-527-11	INDUCTOR	15UH				
L809	1-412-533-21	INDUCTOR	47UH				
L811	1-406-978-11	COIL, CHOKE 150UH					
L813	1-412-552-11	INDUCTOR	2.2MHH				
L901	1-408-603-31	INDUCTOR	10UH				
L902	1-408-603-31	INDUCTOR	10UH				
L903	1-408-409-00	INDUCTOR	10UH				
L904	1-408-409-00	INDUCTOR	10UH				
		< IC LINK >					
PS600	 1-532-686-91	LINK, IC 2.7A (ICP-F75)					
PS601	 1-532-686-91	LINK, IC 2.7A (ICP-F75)					
PS602	 1-532-686-91	LINK, IC 2.7A (ICP-F75)					
PS603	 1-532-686-91	LINK, IC 2.7A (ICP-F75)					
		< TRANSISTOR >					
Q501	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q502	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q503	8-729-900-89	TRANSISTOR DTC144ES					
Q601	8-729-025-04	TRANSISTOR 2SC3852A					
Q602	8-729-320-28	TRANSISTOR 2SA1667					
Q603	8-729-805-05	TRANSISTOR 2SC3601-E					
Q604	8-729-024-35	TRANSISTOR 2SC2808STP-R					
Q605	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q606	8-729-900-65	TRANSISTOR DTA144ES					
Q607	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q800	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q801	8-729-017-06	TRANSISTOR 2SC4793					
Q802	8-729-016-32	TRANSISTOR 2SC4927-01					
Q803	8-729-119-80	TRANSISTOR 2SC2688-LX					
Q804	8-729-900-89	TRANSISTOR DTC144ES					
Q805	8-729-900-89	TRANSISTOR DTC144ES					
Q900	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q1200	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q1201	8-729-900-74	TRANSISTOR DTC143TS					
Q1202	8-729-900-80	TRANSISTOR DTC144ES					
Q1203	8-729-900-74	TRANSISTOR DTC143TS					
Q1204	8-729-900-74	TRANSISTOR DTC143TS					
		< RESISTOR >					
R500	1-215-457-00	METAL	33K 1% 1/4W				
R502	1-249-421-11	CARBON	2.2K 5% 1/4W				
R503	1-249-429-11	CARBON	10K 5% 1/4W				
R504	1-215-457-00	METAL	33K 1% 1/4W				
R505	1-249-382-11	CARBON	1.2 5% 1/4W F				
R507	1-215-888-00	METAL OXIDE	220 5% 2W F				
R508	1-216-371-00	METAL OXIDE	1.5 5% 2W F				
R509	1-249-443-11	CARBON	0.47 5% 1/4W F				
R510	1-249-443-11	CARBON	0.47 5% 1/4W F				
R520	1-215-457-00	METAL	33K 1% 1/4W				
R521	1-215-457-00	METAL	33K 1% 1/4W				
R522	1-247-863-91	CARBON	22K 5% 1/4W				
R523	1-247-863-91	CARBON	22K 5% 1/4W				
R524	1-249-425-11	CARBON	4.7K 5% 1/4W				
R525	1-249-425-11	CARBON	4.7K 5% 1/4W				
R526	1-249-421-11	CARBON	2.2K 5% 1/4W				
R600	1-216-490-11	METAL OXIDE	39K 5% 3W F				
R601	1-249-417-11	CARBON	1K 5% 1/4W				
R602	1-215-473-00	METAL	150K 1% 1/4W				
R603	1-215-898-11	METAL OXIDE	10K 5% 2W F				
R604	1-249-420-11	CARBON	1.8K 5% 1/4W				
R605	1-216-362-11	METAL OXIDE	0.27 5% 2W F				
R607	1-216-421-11	METAL OXIDE	12 5% 1W F				
R608	1-216-365-00	METAL OXIDE	0.47 5% 2W F				
R610	1-215-427-00	METAL	1.8K 1% 1/4W				
R611	1-216-354-11	METAL OXIDE	2.7 5% 1W F				
R612	1-249-428-11	CARBON	8.2K 5% 1/4W				
R613	1-249-417-11	CARBON	1K 5% 1/4W				
R614	1-215-877-11	METAL OXIDE	22K 5% 1W F				
R615	1-249-435-11	CARBON	33K 5% 1/4W				
R616	1-215-471-00	METAL	120K 1% 1/4W				
R617	1-215-901-00	METAL OXIDE	33K 5% 2W F				
R618	1-247-863-91	CARBON	22K 5% 1/4W				
R619	1-216-425-11	METAL OXIDE	56 5% 1W F				
R620	1-260-131-11	CARBON	470K 5% 1/2W				
R621	1-216-425-11	METAL OXIDE	56 5% 1W F				
R622	1-249-437-11	CARBON	47K 5% 1/4W				
R623	1-249-429-11	CARBON	10K 5% 1/4W				
R624	1-249-393-11	CARBON	10 5% 1/4W F				
R625	1-249-434-11	CARBON	27K 5% 1/4W				
R626	1-249-430-11	CARBON	12K 5% 1/4W				
R627	1-216-347-11	METAL OXIDE	0.68 5% 1W F				
R628	1-249-415-11	CARBON	680 5% 1/4W F				
R629	 1-244-945-91	CARBON	1M 5% 1/2W				
R630	 1-218-265-21	METAL	8.2M 5% 1W				
R631	 1-205-949-11	WIRED	1.8 5% 10W				
R632	1-247-807-31	CARBON	100 5% 1/4W				
R633	1-247-807-31	CARBON	100 5% 1/4W				
R634	1-249-397-11	CARBON	22 5% 1/4W F				
R635	1-249-437-11	CARBON	47K 5% 1/4W				
R636	1-249-417-11	CARBON	1K 5% 1/4W				
R637	1-247-815-91	CARBON	220 5% 1/4W				
R638	1-247-863-91	CARBON	22K 5% 1/4W				
R639	1-215-427-00	METAL	1.8K 1% 1/4W				
R642	 1-205-949-11	WIRED	1.8 5% 10W				
R645	1-249-422-11	CARBON	2.7K 5% 1/4W				
R646	1-249-377-11	CARBON	0.47 5% 1/4W F				
R647	1-202-933-61	FUSIBLE	0.1 10% 1/2W F				
R649	1-249-426-11	CARBON	5.6K 5% 1/4W F				

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Replace only with the part number specified.

**KV-28WS2**

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK			
R800	1-249-421-11	CARBON	2.2K 5%	1/4W	R1201	1-249-434-11	CARBON	27K 5%	1/4W	
R802	1-249-429-11	CARBON	10K 5%	1/4W	R1202	1-249-389-11	CARBON	4.7 5%	1/4W	
R803	1-249-423-11	CARBON	3.3K 5%	1/4W	R1203	1-249-421-11	CARBON	2.2K 5%	1/4W	
R805	1-247-863-91	CARBON	22K 5%	1/4W	R1204	1-249-421-11	CARBON	2.2K 5%	1/4W	
R809	1-247-890-00	CARBON	330K 5%	1/4W	R1205	1-249-428-11	CARBON	8.2K 5%	1/4W	
R812	1-249-421-11	CARBON	2.2K 5%	1/4W	R1206	1-249-428-11	CARBON	8.2K 5%	1/4W	
R813	1-215-867-00	METAL OXIDE	470 5%	1W F	R1207	1-249-413-11	CARBON	470 5%	1/4W	
R814	1-249-411-11	CARBON	330 5%	1/4W	R1208	1-212-849-00	FUSIBLE	4.7 5%	1/4W F	
R816	1-216-481-11	METAL OXIDE	1.2K 5%	3W F	R1209	1-212-849-00	FUSIBLE	4.7 5%	1/4W F	
R817	1-216-481-11	METAL OXIDE	1.2K 5%	3W F	R1210	1-249-413-11	CARBON	470 5%	1/4W	
R818	1-215-883-11	METAL OXIDE	33 5%	2W F	R1211	1-249-424-11	CARBON	3.9K 5%	1/4W	
R819	1-216-345-11	METAL OXIDE	0.47 5%	1W F	R1212	1-249-424-11	CARBON	3.9K 5%	1/4W	
R820	1-249-403-11	CARBON	68 5%	1/4W	R1213	1-249-421-11	CARBON	2.2K 5%	1/4W	
R821	1-215-909-11	METAL OXIDE	47 5%	3W F	R1216	1-249-413-11	CARBON	470 5%	1/4W	
R822	1-215-868-00	METAL OXIDE	680 5%	1W F	R1217	1-249-425-11	CARBON	4.7K 5%	1/4W	
R824	1-249-420-11	CARBON	1.8K 5%	1/4W						
R826	1-247-752-11	CARBON	1K 5%	1/2W						
R827	1-249-425-11	CARBON	4.7K 5%	1/4W						
R828	1-247-863-91	CARBON	22K 5%	1/4W						
R829	1-249-493-11	CARBON	56K 5%	1/2W						
R830	1-217-778-11	FUSIBLE	1K 5%	1W F						
R832	1-215-877-11	METAL OXIDE	22K 5%	1W F						
R833	1-249-441-11	CARBON	100K 5%	1/4W						
R835	1-216-471-11	METAL OXIDE	27 5%	3W F						
R836	1-249-439-11	CARBON	68K 5%	1/4W						
R837	1-249-427-11	CARBON	6.8K 5%	1/4W						
R840	1-247-815-91	CARBON	220 5%	1/4W						
R841	1-249-418-11	CARBON	1.2K 5%	1/4W						
R842	1-249-441-11	CARBON	100K 5%	1/4W						
R843	1-247-891-00	CARBON	330K 5%	1/4W						
R846	1-247-893-11	CARBON	390K 5%	1/4W						
R847	1-247-897-11	CARBON	560K 5%	1/4W						
R848	1-249-863-91	CARBON	22K 5%	1/4W						
R849	1-249-429-11	CARBON	10K 5%	1/4W						
R850	1-249-425-11	CARBON	4.7K 5%	1/4W						
R851	1-215-898-11	METAL OXIDE	10K 5%	2W F						
R852	1-249-432-11	CARBON	18K 5%	1/4W						
R870	1-216-349-00	METAL OXIDE	1 5%	1W F						
R900	1-247-815-91	CARBON	220 5%	1/4W						
R901	1-247-734-11	CARBON	39 5%	1/2W						
R902	1-247-734-11	CARBON	39 5%	1/2W						
R904	1-249-389-11	CARBON	4.7 5%	1/4W F						
R905	1-247-804-11	CARBON	75 5%	1/4W						
R906	1-247-804-11	CARBON	75 5%	1/4W						
R907	1-247-804-11	CARBON	75 5%	1/4W						
R908	1-249-401-11	CARBON	47 5%	1/4W						
R909	1-249-429-11	CARBON	10K 5%	1/4W						
R910	1-249-422-11	CARBON	2.7K 5%	1/4W	C1701	1-126-933-11	ELECT	100MF	20%	16V
R911	1-249-426-11	CARBON	5.6K 5%	1/4W	C1702	1-128-551-11	ELECT	22MF	20%	25V
R912	1-249-429-11	CARBON	10K 5%	1/4W	C1703	1-126-933-11	ELECT	100MF	20%	16V
R913	1-247-863-91	CARBON	22K 5%	1/4W	C1704	1-107-357-11	FILM	0.47MF	5%	100V
R914	1-249-437-11	CARBON	47K 5%	1/4W	C1705	1-107-638-11	ELECT	33MF	20%	160V
R919	1-249-437-11	CARBON	47K 5%	1/4W	C1706	1-104-999-11	FILM	0.1MF	5%	200V
R921	1-249-437-11	CARBON	47K 5%	1/4W	C1707	1-137-397-11	FILM	0.047MF	5%	100V
R922	1-247-807-31	CARBON	100 5%	1/4W	C1708	1-137-364-11	FILM	0.001MF	5%	50V
R923	1-249-421-11	CARBON	2.2K 5%	1/4W	C1709	1-137-364-11	FILM	0.001MF	5%	50V
R924	1-259-884-11	CARBON	4.7M 5%	1/4W	C1710	1-102-074-00	CERAMIC	0.001MF	10%	50V
R925	1-247-807-31	CARBON	100 5%	1/4W	C1720	1-107-667-11	ELECT	2.2MF	20%	160V
R926	1-259-884-11	CARBON	4.7K 5%	1/4W	C1721	1-137-397-11	FILM	0.047MF	5%	100V
R1200	1-249-425-11	CARBON	4.7K 5%	1/4W	C1722	1-126-934-11	ELECT	220MF	20%	16V

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C1723	1-161-830-00	CERAMIC	0.0047MF	500V			
C1725	1-128-551-11	ELECT	22MF	20%	25V		
C1726	1-126-934-11	ELECT	220MF	20%	16V		
< CONNECTOR >							
CN1015	*1-568-880-51	PIN, CONNECTOR 5P					
CN1718	1-774-418-11	CONNECTOR, BOARD TO BOARD 8P					
< DIODE >							
D1701	8-719-991-33	DIODE 1SS133T-77					
D1702	8-719-110-88	DIODE RD39ES-B2					
D1703	8-719-110-88	DIODE RD39ES-B2					
< COIL >							
L1701	1-408-409-00	INDUCTOR	10UH				
L1702	1-408-403-00	INDUCTOR	3.3UH				
L1703	1-408-409-00	INDUCTOR	10UH				
L1704	1-408-418-00	INDUCTOR	56UH				
L1705	1-408-418-00	INDUCTOR	56UH				
< TRANSISTOR >							
Q1701	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q1702	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q1703	8-729-017-05	TRANSISTOR 2SA1837					
Q1704	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q1706	8-729-017-06	TRANSISTOR 2SC4793					
Q1708	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q1709	8-729-119-78	TRANSISTOR 2SC2785-HFE					
< RESISTOR >							
R1701	1-249-417-11	CARBON	1K	5%	1/4W		
R1702	1-249-417-11	CARBON	1K	5%	1/4W		
R1703	1-249-421-11	CARBON	2.2K	5%	1/4W		
R1704	1-249-415-11	CARBON	680	5%	1/4W		
R1705	1-247-815-91	CARBON	220	5%	1/4W		
R1706	1-247-815-91	CARBON	220	5%	1/4W		
R1708	1-249-412-11	CARBON	390	5%	1/4W		
R1712	1-260-311-11	CARBON	39	5%	1/2W		
R1713	1-249-384-11	CARBON	1.8	5%	1/4W F		
R1714	1-249-414-11	CARBON	560	5%	1/4W F		
R1715	1-249-432-11	CARBON	18K	5%	1/4W		
R1716	1-249-417-11	CARBON	1K	5%	1/4W F		
R1717	1-216-476-11	METAL OXIDE	180	5%	3W F		
R1718	1-249-432-11	CARBON	18K	5%	1/4W		
R1719	1-249-384-11	CARBON	1.8	5%	1/4W F		
R1720	1-249-400-11	CARBON	39	5%	1/4W F		
R1721	1-249-414-11	CARBON	560	5%	1/4W		
R1722	1-249-401-11	CARBON	47	5%	1/4W		
R1724	1-249-400-11	CARBON	39	5%	1/4W		
R1725	1-216-451-11	METAL OXIDE	120	5%	2W F		
< CONNECTOR >							
C290	1-101-003-00	CERAMIC	0.0047MF		50V		
C291	1-101-005-00	CERAMIC	0.022MF		50V		
C293	1-101-003-00	CERAMIC	0.0047MF		50V		
C294	1-101-005-00	CERAMIC	0.022MF		50V		
C296	1-101-003-00	CERAMIC	0.0047MF		50V		
C297	1-101-005-00	CERAMIC	0.022MF		50V		
< CONNECTOR >							
CN1204	*1-564-519-11	PLUG, CONNECTOR 4P					

**Les composants identifiés par une trame et une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.**

The components identified by shading and marked  are critical for safety.  
Replace only with the part number specified.

**KV-28WS2**

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